April 2026:Top10DownloadArticle in Natural Language Computing

International Journal on Natural Language Computing (IJNLC)

https://airccse.org/journal/ijnlc/index.html

ISSN:2278-1307[Online];2319-4111[Print]

NAMEDENTITY RECOGNITION USING HIDDEN MARKOV MODEL(HMM)

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ABSTRACT:

Named Entity Recognition(NER)isthesubtaskofNaturalLanguageProcessing(NLP)which is the bran cho fartificial intelligence. It has many applications mainly in machine translation, text to speech synthesis, natural language understanding, Information Extraction, Information retrieval, question answering etc. The aim of NER is to classify words into some predefined categories like location name, person name, organization name, date, time etc. In this paper we describe the Hidden Markov Model (HMM) based approach of machine learning in detail to identify the named entities. The main idea behind the use of HMM model for building NER system is that it is language independent and we can apply this system for any language domain. In our NER system the states are not fixed means it is of dynamic in nature one can use it according to their interest. The corpus used by our NER system is also not domain specific.

KEYWORDS

Named Entity Recognition (NER), Natural Language processing (NLP), Hidden Markov Model (HMM).

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Volume Url: http://airccse.org/journal/ijnlc/vol1.html

REFERENCES

[1] PramodKumarGupta,SunitaArora“AnApproachforNamedEntityRecognitionSystem for Hindi: An Experimental Study” in Proceedings of ASCNT – 2009, CDAC, Noida, India, pp.103–108.

[2] Shilpi Srivastava, Mukund Sanglikar & D.C Kothari. ”Named EntityRecognition System forHindi Language: A Hybrid Approach” International Journal of Computational Linguistics (IJCL), Volume(2):Issue(1):2011.Availableat: http://cscjournals.org/csc/manuscript/Journals/IJCL/volume2/Issue1/IJCL-19.pdf

[3] “Padmaja Sharma, Utpal Sharma, Jugal Kalita”Named Entity Recognition: A Survey for the Indian Languages”(Language in India www.languageinindia.com 11:5 May 2011 Special Volume: Problems of Parsing in Indian Languages.) Available at: http://www.languageinindia.com/may2011/padmajautpaljugal.pdf.

[4] Lawrence R. Rabiner, " A Tutorial on Hidden Markov Models and Selected Applications inSpeechRecognition",InProceedingsoftheIEEE,VOL.77,NO.2,February1989.Available at: http://www.cs.ubc.ca/~murphyk/Bayes/rabiner.pdf.

[5] Sujan Kumar Saha, Sudeshna Sarkar, Pabitra Mitra “Gazetteer Preparation for Named Entity Recognition in Indian Languages” in the Proceeding of the 6th Workshop on Asian Language Resources, 2008 . Available at: http://www.aclweb.org/anthology-new/I/I08/I08-7002.pdf

[6] B. Sasidhar#1, P. M. Yohan*2, Dr. A. Vinaya Babu3, Dr. A. Govardhan4” A Survey on Named EntityRecognition in Indian Languages with particular reference to Telugu” in IJCSI International Journal of Computer Science Issues, Vol. 8, Issue 2, March 2011 available at : http://www.ijcsi.org/papers/IJCSI-8-2-438-443.pdf.

[7] GuoDongZhouJianSu,”NamedEntityRecognitionusinganHMM-basedChunkTagger” in Proceedings of the 40th Annual Meeting of the Association for Computational Linguistics (ACL), Philadelphia, July 2002, pp. 473-480.

[8] http://en.wikipedia.org/wiki/Forward–backward_algorithm

[9] http://en.wikipedia.org/wiki/Baum-Welch_algorithm.

[10] DanShen, jie Zhang, Guodong Zhou,Jian Su, Chew-Lim Tan” Effective Adaptation ofa HiddenMarkovModel-basedNamedEntityRecognizerforBiomedicalDomain”availableat: http://acl.ldc.upenn.edu/W/W03/W03-1307.pdf.

RESUMEINFORMATIONEXTRACTIONWITHANOVELTEXTBLOCK SEGMENTATION ALGORITHM

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ABSTRACT

In recent years, we have witnessed the rapid development of deep neural networks and distributedrepresentationsinnaturallanguageprocessing.However,the applicationsofneural networks in resume parsing lack systematic investigation. In this study, we proposed an end-to-end pipeline for resume parsing based on neural networks-based classifiers and distributed embeddings. This pipeline leverages the position-wise line information and integrated meaningsofeachtextblock.Thecoordinatedlineclassificationbybothlinetypeclassifierand line label classifier effectively segment a resume into predefined text blocks. Our proposed pipeline joints the text block segmentation with the identification of resume facts in which various sequence labelling classifiers perform named entity recognition within labelled text blocks. Comparative evaluation of four sequence labelling classifiers confirmed BLSTMCNNs-CRF'ssuperiorityinnamedentityrecognitiontask.Furthercomparisonamong three publicized resume parsers also determined the effectiveness of our text block classification method.

KEYWORDS

Resume Parsing, Word Embeddings, Named Entity Recognition, Text Classifier, Neural Networks

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Volume URL:https://airccse.org/journal/ijnlc/vol8.html

REFERENCES

[1] PengZhou,WeiShi,JunTian,ZhenyuQi,BingchenLi,HongweiHao,andBoXu(2016) "Attention-based Bidirectional Long Short-term Memory Networks for Relation Classification", In Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (ACL'16), Berlin, Germany, August 7-12, 2016, pp 207-212.

[2] Xuezhe Ma, & Eduard Hovy (2016) "End-to-End Sequence Labelling via Bi-directional LSTMCNNs-CRF", In Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (ACL'16), Berlin, Germany, August 7-12, 2016, pp 1064-1074.

[3] Kun Yu, Gang Guan, and Ming Zhou (2005) "Resume Information Extraction with Cascaded Hybrid Model" In Proceedings of the 43rd Annual Meeting of the Association for Computational Linguistics (ACL'05), Stroudsburg, PA, USA, June 2005, pp 499-506.

[4] Jie Chen, Chunxia Zhang, and Zhendong Niu (2018) "A Two-Step Resume Information ExtractionAlgorithm"MathematicalProblems inEngineeringpp1-8. [5]JieChen, Zhendong Niu,andHongpingFu(2015)"ANovelKnowledgeExtractionFrameworkforResumesBased onTextClassifier"In:DongX.,YuX.,LiJ.,SunY.(eds)Web-AgeInformationManagement (WAIM 2015) Lecture Notes in Computer Science, Vol. 9098, Springer, Cham.

[6] Hui Han, C. Lee Giles, Eren Manavoglu, HongYuan Zha (2003) "Automatic Document Metadata Extraction using Support Vector Machine" In Proceedings of the 2003 Joint Conference on Digital Libraries, Houston, TX, USA, pp 37-48.

[7] DavidPinto,AndrewMcCallum,XingWei,andW.BruceCroft(2003)"TableExtraction UsingConditionalRandomField"InProceedingsofthe26thannualinternationalACMSIGIR conference on Research and development in information retrieval, Toronto, Canada, pp 235-242.

[8] Amit Singh, Catherine Rose, Karthik Visweswariah, Enara Vijil, and Nandakishore Kambhatla (2010) "PROSPECT: A system for screening candidates for recruitment" In Proceedings of the 19th ACM international conference on Information and knowledge management, (CIKM'10), Toronto, ON, Canada, October 2010, pp 659-668.

[9] Anjo Anjewierden (2001) "AIDAS: Incremental Logical Structure Discovery in PDF Documents" In Proceedings of 6th International Conference on Document Analysis and Recognition (ICDAR'01) pp 374-378.

[10] Sumit Maheshwari, Abhishek Sainani, and P. Krishna Reddy (2010) "An Approach to Extract Special Skills to Improve the Performance of Resume Selection" Databases in Networked Information Systems, Vol. 5999 of Lecture Notes in ComputerScience, Springer, Berlin, Germany, 2010, pp 256-273.

[11] XiangwenJi,JianpingZeng,ShiyongZhang,ChenrongWu(2010)"Tagtreetemplatefor Web information and schema extraction" Expert Systems with Applications Vol. 37, No.12, pp 8492- 8498.

[12] V. Senthil Kumaranand A. Sankar(2013)"Towards anautomated system forintelligent screening of candidates for recruitment using ontology mapping (EXPERT)" International Journal of Metadata, Semantics and Ontologies, Vol. 8, No. 1, pp 56-64.

[13] Fabio Ciravegna (2001) "(LP)2,an Adaptive Algorithmfor InformationExtraction from Webrelated Texts" InProceedings ofthe IJCAI-2001 WorkshoponAdaptiveText Extraction and Mining. Seattle, WA.

[14] Fabio Ciravegna, and Alberto Lavelli (2004) "LearningPinocchio: adaptive information extraction for realworld applications" JournalofNaturalLanguage EngineeringVol. 10, No.

2,pp145-165.
[15] YanWentan,andQiaoYupeng(2017)“Chineseresumeinformationextractionbasedon semistructure text” In 36th Chinese Control Conference (CCC), Dalian, China.
[16] Zhang Chuang, Wu Ming, Li Chun Guang, Xiao Bo, and Lin Zhi-qing (2009) “Resume Parser: Semi-structured Chinese document analysis” In Proceedings of the 2009 WRI World Congress on Computer Science and Information Engineering, Los Angeles, USA, Vol. 5 pp 12-16.
[17] Zhixiang Jiang, Chuang Zhang, Bo Xiao, and Zhiqing Lin (2009) “Research and ImplementationofIntelligentChineseresumeParsing”In2009WRIInternationalConference on Communications and Mobile Computing, Yunan, China, Vol. 3 pp 588-593.
[18] DuyguÇelik,AskýnKarakas,GülsenBal,CemGültunca,AtillaElçi,BasakBuluz,and Murat Can Alevli (2013) “Towards an Information Extraction System based on Ontology to MatchResumes and Jobs” In Proceedings ofthe 2013 IEEE37th AnnualComputer Software and Applications Conference Workshops, Japan, pp 333-338.
[19] TomasMikolov,KaiChen,GregCorrado,andJeffreyDean(2013)“EfficientEstimation ofWordRepresentationsinVectorSpace”ComputerScience,arXivpreprintarxiv:1301.3781.
[20] JeffreyPennington,RichardSocher,andChristopherD.Manning(2014)“GloVe:Global Vectors for Word Representation” In Empirical Methods in Natural Language Processing (EMNLP) pp 1532-1543.

SURVEYOFMACHINETRANSLATIONSYSTEMSININDIA

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ABSTRACT

The work in the area of machine translation has been going on for last few decades but the promising translation work began in the early 1990s due to advanced research in Artificial Intelligence and Computational Linguistics. India is a multilingual and multicultural country with over 1.25 billion population and 22 constitutionally recognized languages which are written in 12 different scripts. This necessitates the automated machine translation system for English to Indian languages and among Indian languages so as to exchange the information amongst people in their local language. Many usable machine translation systems have been developed and are under development in India and around the world. The paper focuses on differentapproachesusedinthedevelopmentofMachineTranslationSystemsandalsobriefly described some of the Machine Translation Systems along with their features, domains and limitations.

KEYWORDS

MachineTranslation,Example-basedMT,Transfer-basedMT,Interlingua-basedMT

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Volume URL:http://airccse.org/journal/ijnlc/vol2.html

REFERENCES

[1] Sitender & Seema Bawa, (2012) "Survey of Indian Machine Translation Systems", International Journal Computer Science and Technolgy, Vol. 3, Issue 1, pp. 286-290, ISSN : 0976-8491 (Online) | ISSN : 2229-4333 (Print)

[2] Sanjay Kumar Dwivedi & Pramod Premdas Sukhadeve, (2010) "Machine Translation System in IndianPerspectives", JournalofComputer Science6 (10): 1082-1087, ISSN 1549-3636,©2010Science

[3] John Hutchins, (2005) "Current commercial machine translation systems and computer-based translation tools: system types and their uses", International Journal of Translation vol.17, no.1-2, pp.5-38.

[4] Vishal Goyal & Gurpreet Singh Lehal, (2009) "Advances in Machine Translation Systems", National Open Access Journal, Volume 9, ISSN 1930-2940 http://www.languageinindia.

[5] Latha R. Nair & David Peter S., (2012) "Machine Translation Systems for Indian Languages", InternationalJournalofComputerApplications(0975–8887)Volume39–No.1

[6] Vishal Goyal & Gurpreet Singh Lehal, (2010) "Web Based Hindi to Punjabi Machine TranslationSystem",InternationalJournal of EmergingTechnologiesinWebIntelligence, Vol.2,no.2,pp.148-151, ACADEMYPUBLISHER

[7] Shachi Dave, Jignashu Parikh & Pushpak Bhattacharyya, (2002) "Interlingua-based English-Hindi Machine Translation and Language Divergence", Journal of Machine Translation, pp. 251-304.

[8] Sudip Naskar & Shivaji Bandyopadhyay, (2005) "Use of Machine Translation in India: Current status" AAMT Journal, pp. 25-31.

[9] SnehaTripathi&JuranKrishnaSarkhel,(2010)"ApproachestoMachineTranslation", InternationaljournalofAnnalsofLibraryandInformationStudies,Vol.57,pp.388-393

[10] Gurpreet Singh Josan & Jagroop Kaur, (2011) "Punjabi To Hindi Statistical Machine Transliteration", International Journal of Information Technology and Knowledge Management , Volume 4, No. 2, pp. 459-463.

[11] S. Bandyopadhyay, (2004) "ANUBAAD - The Translator from English to Indian Languages",in proceedingsof theVIIth State ScienceandTechnology Congress.Calcutta. India.pp.43-51

[12] R.M.K. Sinha & A. Jain, (2002) "AnglaHindi: An English to Hindi Machine-Aided TranslationSystem",InternationalConferenceAMTA(AssociationofMachineTranslationin the Americas)

[13] Murthy. K, (2002) "MAT: A Machine Assisted Translation System", In Proceedings of Symposium on Translation Support System(STRANS-2002), IIT Kanpur. pp. 134-139.

[14] Lata Gore & Nishigandha Patil, (2002) "English to Hindi - Translation System", In proceedings of Symposium on Translation Support Systems. IIT Kanpur. pp. 178-184.

[15] Kommaluri Vijayanand, Sirajul Islam Choudhury & Pranab Ratna "VAASAANUBAADA - Automatic Machine Translation of Bilingual Bengali-Assamese NewsTexts",inproceedingsofLanguageEngineeringConference-2002,Hyderabad, India© IEEE Computer Society.

[16] Bharati, R. Moona, P. Reddy, B. Sankar, D.M. Sharma & R. Sangal, (2003) "Machine Translation: The Shakti Approach", Pre-Conference Tutorial, ICON-2003.

[17] S. Mohanty & R. C. Balabantaray, (2004) "English to Oriya Translation System (OMTrans)" cs.pitt.edu/chang/cpol/c087.pdf

[18] Ananthakrishnan R, Kavitha M, Jayprasad J Hegde, Chandra Shekhar, Ritesh Shah, Sawani Bade & Sasikumar M., (2006) "MaTra: A Practical Approach to Fully- Automatic Indicative EnglishHindi Machine Translation", In the proceedings of MSPIL-06.
[19] G. S. Josan & G. S. Lehal, (2008) "A Punjabi to Hindi Machine Translation System", in proceedingsofCOLING-2008:Companionvolume:PostersandDemonstrations,Manchester, UK, pp. 157-160.
[20] Sanjay Chatterji, Devshri Roy, Sudeshna Sarkar & Anupam Basu, (2009) "A Hybrid Approach for Bengali to Hindi Machine Translation", In proceedings of ICON-2009, 7th International Conference on Natural Language Processing, pp. 83-91.
[21] Vishal Goyal & Gurpreet Singh Lehal, (2011) "Hindi to Punjabi Machine Translation System",inproceedingsoftheACL-HLT 2011SystemDemonstrations,pages1–6,Portland, Oregon, USA, 21 June 2011.
[22] Ankit Kumar Srivastava, Rejwanul Haque, Sudip Kumar Naskar & Andy Way, (2008) "TheMATREX(MachineTranslationusingExample):TheDCUMachineTranslationSystem for ICON 2008", in Proceedings of ICON-2008: 6th International Conference on Natural Language Processing, Macmillan Publishers, India, http://ltrc.iiit.ac.in/proceedings/ICON-2008.
[23] hutchinsweb.me.uk/Nutshell-2005.pdf
[24] John Hutchins"Historicalsurveyof machine translation in Eastern and CentralEurope", Basedonanunpublishedpresentationattheconferenceon CrosslingualLanguageTechnology in service of an integrated multilingual Europe, 4-5 May 2012, Hamburg, Germany. (www.hutchinsweb.me.uk/Hamburg-2012.pdf)
[25] Sampark: Machine Translation System among Indian languages (2009) http://tdildc.in/index.php?option=com_vertical&parentid=74,http://sampark.iiit.ac.in/
[26] Akshar Bharti, Chaitanya Vineet, Amba P. Kulkarni & Rajiv Sangal, (1997) "ANUSAARAKA: Machine Translation in stages', Vivek, a quarterly in Artificial Intelligence, Vol. 10, No. 3, NCST Mumbai, pp. 22-25
[27] Akshar Bharti, Chaitanya Vineet, Amba P. Kulkarni & Rajiv Sangal, (2001) "ANUSAARAKA: overcoming the language barrier in India", published in Anuvad: approaches to Translation
[28] Hemant Darabari, (1999) "Computer Assisted Translation System- An Indian Perspective", in proceedings of MT Summit VII, Thialand [29] R. Mahesh K. Sinha & Anil Thakur, (2005) "Machine Translation of Bi-lingual Hindi-English (Hinglish) Text", in proceedings of 10th Machine Translation Summit organized by Asia-Pacific Association for Machine Translation (AAMT), Phuket, Thailand
[30] Parameswari K, Sreenivasulu N.V., Uma Maheshwar Rao G & Christopher M, (2012) "DevelopmentofTelugu-TamilBidirectionalMachineTranslationSystem:Aspecialfocuson case divergence", in proceedings of11th International TamilInternet conference, pp 180-191
[31] Salil Badodekar, (2004) "Translation Resources, Services and Tools for Indian Languages", a report of Centre for Indian Language Technology, IITB, http://www.cfilt.iitb.ac.in/Translationsurvey/survey.pdf
[32] Ananthakrishnan R, Kavitha M, Jayprasad J Hegde, Chandra Shekhar, Ritesh Shah, Sawani Bade & Sasikumar M, (2006) "MaTra: A Practical Approach to Fully-Automatic IndicativeEnglishHindiMachineTranslation",inproceedingsofthefirstnationalsymposium onModellingandshallowparsingofIndianlanguages(MSPIL-06)organizedbyIITBambay, 202.141.152.9/clir/papers/matra_mspil06.pdf

[33] CDAC Mumbai, (2008) “MaTra: an English to Hindi Machine Translation System”, a report by CDAC Mumbai formerly NCST.
[34] Sanjay Chatterji, Praveen Sonare, Sudeshna Sarkar & Anupam Basu, (2011) “Lattice BasedLexicalTransferinBengaliHindiMachineTranslationFramework”,inProceedingsof ICON2011: 9th International Conference on Natural Language Processing, Macmillan Publishers, India. Also accessible from ltrc.iiit.ac.in/proceedings/ICON-2011.
[35] R. Ananthakrishnan, Jayprasad Hegde, Pushpak Bhattacharyya, Ritesh Shah & M. Sasikumar, (2008) “Simple Syntactic and Morphological ProcessingCan Help English-Hindi Statistical Machine Translation”, in proceedings of International Joint Conference on NLP (IJCNLP08), Hyderabad, India.
[36] Yanjun Ma, John Tinsley, Hany Hassan, Jinhua Du & Andy Way, (2008) “Exploiting AlignmentTechniquesinMATREX:theDCUMachineTranslationSystemforIWSLT2008’, in proceedings of IWSLT 2008, Hawaii, USA
[37] projects.uptuwatch.com/cs-it/anubharti-an-hybrid-example-based-approach-for-machine-aidedtrapnslation/
[38] Sugata Sanyal & Rajdeep Borgohain, (2013) “Machine Translation Systems in India”, Cornel University Library, arxiv.org/ftp/arxiv/papers/1304/1304.7728.pdf [39] Antony P. J., (2013) “Machine Translation Approaches and Survey for Indian Languages”, International journalofComputationalLinguisticsandChineseLanguageProcessingVol.18,No.1,pp.47- 78.
[40] Manoj Jain & Om P. Damani, (2009) “English to UNL (Interlingua) Enconversion”, in proceedings of 4th Language and Translation Conference (LTC-09).
[41] SmritiSingh,MrugankDalal,VishalVachhani,PushpakBhattacharyya&OmP.Damani, (2007) “Hindi Generation from Interlingua (UNL)”, in proceedings of MT Summit, 2007
[42] language.worldofcomputing.net
[43] sampark.iiit.ac.in[44]www.cdacmumbai.in/xlit[
45]www.cdacmumbai.in/rupantar
[46] translationjournal.net/journal/29computers.htm
[47] www.cfilt.iitb.ac.in/resources/surveys/MT-Literature%20Survey-2012-Somya.pdf
[48] www.cdacmumbai.in/e-ilmt
[49] www.iiit.net/ltrc/Anusaaraka/anu_home.html
[50] cdac.in/html/aai/mantra.asp
[51] translate.google.com/about/intl/en_ALL/

GRAMMARCHECKERSFORNATURALLANGUAGES:AREVIEW

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ABSTRACT

Natural Language processing is an interdisciplinary branch of linguistic and computer science studied under the Artificial Intelligence (AI) that gave birth to an allied area called 'Computational Linguistics' which focuses on processing of natural languages on computationaldevices.Anaturallanguageconsistsofmanysentenceswhicharemeaningful linguistic units involving one or more words linked together in accordance with a set of predefined rules called 'grammar'. Grammar checking is fundamental task in the formal worldthatvalidatessentencessyntacticallyaswell assemantically.GrammarCheckertool is a prominent tool within language engineering. Our review draws on the till date development of various Natural Language grammar checkers to look at past, present and thefutureinthepresentcontext.Ourreviewcoverscommongrammaticalerrors,overview of grammar checking process, grammar checkers of various languages with the aim of seekingtheirapproaches,methodologiesandperformanceevaluation,whichwouldbegreat help for developing new tool and system as a whole. The survey concludes with the discussionofdifferentfeaturesincludedinexistinggrammarcheckersofforeignlanguages as well as a few Indian Languages.

KEYWORDS

Natural Language Processing, Computational Linguistics, Writing errors,Grammatical mistakes, Grammar Checker

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Volume URL:https://airccse.org/journal/ijnlc/vol6.html

REFERENCES

[1] Misha Mittal, Dinesh Kumar, Sanjeev Kumar Sharma, "Grammar Checker for Asian Languages:ASurvey",InternationalJournalofComputerApplications&Information TechnologyVol.9,IssueI, 2016

[2] DebelaTesfaye,"Arule-basedAfanOromoGrammarChecker",InternationalJournal of Advanced Computer Science and Applications, Vol. 2, No. 8, 2011

[3] AynadisTemesgenGebru,'DesignanddevelopmentofAmharicGrammarChecker', 2013

[4] Arppe,Antti."DevelopingaGrammarCheckerforSwedish".The12thNordic conference computational linguistic. 2000. PP. 13 – 27.

[5] "A prototype of a grammar checker for Icelandic", available at www.ru.is/~hrafn/students/BScThesis_Prototype_Icelandic_GrammarChecker.pdf

[6] BalKrishnaBal,PrajolShrestha,"ArchitecturalandSystemDesignoftheNepali Grammar Checker", www.panl10n.net/english/.../Nepal/Microsoft%20Word%20-%208_OK_N_400.pdf

[7] Kinoshita,Jorge;Nascimento,Laиsdo;Dantas,CarlosEduardo."CoGrOO:aBrazilian-PortugueseGrammarCheckerbasedontheCETENFOLHACorpus".UniversidadedaSгo Paulo (USP), Escola Politйcnica. 2003.

[8] Domeij, Rickard; Knutsson, Ola; Carlberger, Johan; Kann, Viggo. "Granska: An efficient hybrid system for Swedish grammar checking". Proceedings of the 12th Nordic conference in computational linguistic, Nodalida- 99. 2000.

[9] Jahangir Md; Uzzaman, Naushad; Khan, Mumit. "N-Gram Based Statistical Grammar Checker For Bangla And English". Center for Research On Bangla Language Processing. Bangladesh, 2006.

[10] Singh, Mandeep; Singh, Gurpreet; Sharma, Shiv. "A Punjabi Grammar Checker". Punjabi University. 2nd international conference of computational linguistics: Demonstration paper. 2008. pp. 149 – 132.

[11] SteveRichardson."MicrosoftNatuarallanguageUnderstandingSystemandGrammar checker". Microsoft.USA, 1997.

[12] DanielNaber."ARule-BasedStyleAndGrammarChecker".Diplomarbeit. TechnischeFakultätBielefeld, 2003

[13] "Brief History of Grammar Check Software", available at: http://www.grammarcheck.net/briefhistory-of-grammar-check software/, Accessed On October 28, 2011.

[14] Gelbukh, Alexander. "Special issue: Natural Language Processing and its Applications". InstitutoPolitécnico Nacional. Centro de InvestigaciónenComputación. México 2010.

[15] H.Kabir,S.Nayyer,J.Zaman,andS.Hussain,"TwoPassParsingImplementationfor an Urdu Grammar Checker."

[16] Jaspreet Kaur, Kamaldeep Garg, " Hybrid Approach for Spell Checker and Grammar Checker for Punjabi," vol. 4, no. 6, pp. 62–67, 2014.

[17] LataBopche, GauriDhopavkar, and ManaliKshirsagar, "Grammar Checking System Using Rule Based Morphological Process for an Indian Language", Global Trends in Information Systems and Software Applications, 4th International Conference, ObCom 2011 Vellore, TN, India, December 9-11, 2011.

[18] MadhaviVaralwar,NixonPatel."CharacteristicsofIndianLanguages" available at

“http://http://www.w3.org/2006/10/SSML/papers/CHARACTERISTICS_OF_INDIAN_LANGUAG ES.pdf” on 30/12/2013
[19] KennethW.ChurchandLisaF.Rau,“CommercialApplicationsofNaturalLanguage Processing”,COMMUNICATIONSOFTHEACM,Vol.38,No.11,November1995
[20] ChandhanaSurabhi.M, “Natural Language Processing Future”, Proceedings of InternationalConference onOpticalImagingSensor and Security, Coimbatore,TamilNadu, India,July2-3,2013
[21] ER-QINGXU,“NATURALLANGUAGEGENERATIONOFNEGATIVE SENTENCES IN THE MINIMALIST PARADIGM”, Proceedings of the Fourth InternationalConferenceonMachineLearningandCybernetics,Guangzhou,18-21August 2005
[22] Jurafsky Daniel, H., James. Speech and Language Processing: “An introduction to natural language processing, computational linguistics and speech recognition” June 25, 2007.
[23] Aronoff,Mark;Fudeman,Kirsten.“WhatisMorphology?”.Blackwellpublishing.Vol 8. 2001. [24] S., Philip; M.W., David. “A Statistical Grammar Checker”. Department of Computer Science. Flinders University of South Australia.South Australia, 1996
[25] MochamadVickyGhaniAziz,ArySetijadiPrihatmanto,DiotraHenriyan,Rifki W[illegible]jaya, “Design and Implementation of Natural Language Processing with Syntax and Semantic Analysis for Extract Traffic Conditions from Social Media Data” , IEEE 5th International Conference on System Engineering and Technology,Aug.10-11,UiTM,ShahAlam,Malaysia,2015
[26] Chandhana Surabhi.M,”Natural Language Processing Future”, Proceedings of InternationalConferenceonOpticalImagingSensorandSecurity,Coimbatore,TamilNadu, India,July2-3,2013
[27] Blossom Manchanda, Vijay Anant Athvale, Sanjeev Kumar Sharma, “ Various Techniques used for Grammar Checking”, Internation Journal of Computer Application & information Technology, Vol. 9, Issue 1, 2016
[28] Simon Ager,1998-2017, Language Index[online].Available: http://www.omniglot.com/writing/languages.htm
[29] NitinIndurkhya&FredJ.Damerau,”AHandbookofNaturalLanguageProcessing” CambridgeUK[30]Available:http://authority.pub/common-grammar-mistakes/
[31]Mo.Ra.Walambe,“SugamMarathiVyakaranvaLekhan”,NitinPrakashan,1988.

MACHINETRANSLATIONDEVELOPMENTFORINDIANLANGUAGESANDITS APPROACHES

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ABSTRACT

This paper presents a survey of Machine translation system for Indian Regional languages. Machine translation is one of the central areas of Natural language processing (NLP). Machine translation (henceforth referred as MT) is important for breaking the language barrier and facilitating inter-lingual communication. For a multilingual country like INDIA which is largest democratic country in whole world, there is a big requirement of automatic machine translation system. With the advent of Information Technologymanydocuments and web pages are coming up in a local language so there is a large need of good MT systems to address all these issues in order to establish a proper communication between states and union governments to exchange information amongst the people of different states. This paper focuses on different Machine translation projects done in India along with their features and domain.

KEYWORDS

Machinetranslation,computationallinguistics,IndianLanguages,Rule-based,Statistical, Empirical MT, Principle-based, Knowledge-based, Hybrid

Full Text:https://airccse.org/journal/ijnlc/papers/4215ijnlc05.pdf

Volume URL:https://airccse.org/journal/ijnlc/vol4.html

SURVEYONMACHINETRANSLITERATIONANDMACHINELEARNING MODELS

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ABSTRACT

Globalization and growth of Internet users truly demands for almost all internet based applications to support ocallanguages. Support of locallanguages can be given in all internet based applications bymeans of Machine Transliteration and Machine Translation. This paper provides the thorough survey on machine transliteration models and machine learning approaches used for machine transliteration over the period of more than two decades for internationally used languages as well as Indian languages. Survey shows that linguistic approach provides better results for the closely related languages and probability based statistical approaches are good when one of the languages is phonetic and other is nonphonetic.Better accuracy can be achieved only by using Hybrid and Combined models.

KEYWORDS

CRF,Grapheme,HMM,MachineTransliteration,MachineLearning,NCM,Phoneme,SVM

Full Text:https://airccse.org/journal/ijnlc/papers/4215ijnlc02.pdf

Volume URL:https://airccse.org/journal/ijnlc/vol4.html

REFERENCES

[1] KarimiS,ScholerF,&Turpin,(2011)"MachineTransliterationSurvey",ACMComputing Surveys, Vol. 43, No. 3, Article 17, pp.1-46.

[2] AntonyPJ&SomanKP,(2011)"MachineTransliterationforIndianLanguages:A LiteratureSurvey", InternationalJournalofScientificandEngineeringResearch, Vol2, Issue 12, pp. 1-8.

[3] Jong-Hoon Oh, Key-Sun Choi & Hitoshi Isahara, (2006) "A Comparison of Different Machine Transliteration Models", Journal of Artificial Intelligence Research, pp. 119-151.

[4] Brown P F, Pietra V J D, Pietra S A D, & Mercer R L, (1993) "The Mathematics of Statistical Machine Translation: Parameter estimation", Computational Linguistic, 19, 2 pp. 263–311.

[5] Knight Kevin&GraehlJonathan,(1998)"Machine Transliteration", InProceedingsofthe 35th Annual Meetings of The Association for Computational Linguistics, pp. 128-135..

[6] Li Haizhou et al., (2004) "A Joint Source-Channel Model for Machine Transliteration", ACL.

[7] L Rabiner, (1989) "A tutorial on Hidden Markov Models and Selected Applications inSpeech Recognition", Proceedings of IEEE, Vol. 77, No. 2, pp. 257-296.

[8] PhilBlunsom,(2004)"HiddenMarkovModels".

[9] JLaffertyetal.,(2001)"ConditionalRandomFields:ProbabilisticModelsforSegmenting and Labeling Sequence Data", In International Conference on Machine Learning.

[10] HannaM.Wallach,(2004)"ConditionalRandomFields:AnIntroduction",Universityof Pennsylvania CIS Technical Report MS-CIS-04-21.

[11] CharlesSetal.,"AnIntroductiontoCRFRelationalLearning",Universityof Massachusetts.

[12] A L Berger, S D Pietra, & V J Della Pietra, (1996) "A Maximum Entropy Approach to Natural Language Processing", Computational Linguistics, vol. 22, no. 1, pp. 39–71.

[13] K.P.Somanetal,MachineLearningwithSVMandOtherKernelMethods,Book, PHI.

[14] Y.Yuanetal.(1995)Fuzzysetsand Systems,pp125-139.

[15] LeeJS&ChoiKS,(1998)"EnglishtoKoreanStatisticalTransliterationForInformation Retrieval", Computer Processing of Oriental Languages.

[16] Kang I H et al., (2000) "English-to-Korean Transliteration Using Multiple Unbounded Overlapping Phoneme Chunks", In Proceedings of the 18th Conference on Coling, pp. 418–424.

[17] Kang B J et al., (2000) "Automatic Transliteration & Back-Transliteration by Decision Tree Learning", 2nd International Conference on Language Resources and Evaluation.

[18] Kang B J (2001) "A Resolution of Word Mismatch Problem Caused by Foreign Word Transliterations and English Words in Korean Information Retrieval", Ph.D. Thesis, KAIST.

[19] Goto I et al, (2003) "Transliteration Considering Context Information Based on the Maximum Entropy Method", In Proceedings of MT-Summit IX, pp. 125-132.

[20] Jaleel et al, (2003) "Statistical Transliteration For English-Arabic Cross Language Information Retrieval", 12th International Conference on Information and Knowledge Management.

[21] Lee, J et al., (2003), "Acquisition of English-Chinese Transliterated Word Pairs from Parallel-AlignedTextsusingaStatisticalMachineTransliterationModel",HLT-NAACL 2003.

[22] LiHetal.,(2004)"AJointSource-ChannelModelforMachineTransliteration", ACL.

[23] Malik M G A, (2006) "Punjabi Machine Transliteration", In Proceedings of the 21st International Conference on Computational Linguistics, ACL, pp.1137-1144.

[24] EkbalA,NaskarS&BandyopadhyayS,(2006)"AModifiedJointSourceChannelModel for Transliteration", In Proceedings of the COLING-ACL, Australia, pp.191-198.

[25] Kumaran A et al., (2007) "A Generic Framework for Machine Transliteration", 30th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval.

[26] Hermjakob, U. Et al., (2008) "Name Translation in Statistical Machine Translation Learning When to Transliterate", Proceedings of Association for Computational Linguistics, pp.389–397.

[27]Ganesh S, Harsha S, Pingali P, &Verma V, (2008) "Statistical Transliteration for Cross Language Information Retrieval Using HMM Alignment and CRF", In Proceedings of the Workshop on CLIA, Addressing the Needs of Multilingual Societies.

[28] Rama T. Et al., (2009) "Modeling Machine Transliteration as a Phrase Based Statistical Machine Translation Problem", Proceedings of the 2009 Named Entities Workshop, pp. 124-127.

[29] Martin Jansche& Richard Sproat, (2009) "Named EntityTranscription with Pair n-Gram Models",Google Inc.,Proceedingsofthe2009NamedEntitiesWorkshop,Singaporepp.32– 35.

[30] Jong-HoonOhetal.,(2009)"Ma-chineTransliterationUsingTarget-LanguageGrapheme and Phoneme: Multi-Engine Transliteration Approach", Named Entities Workshop, pp. 36– 39.

[31] SittichaiJiampojamarnetal,(2009)"DirecTL:aLanguageIndependentApproachto Transliteration", Proceedings of the 2009 Named Entities Workshop, Singapore, pp. 28–31.

[32] Paul,M.Etal.,(2009)"ModelAdaptationandTransliterationforSpanish-EnglishSMT", Proceedings of the 4th EACL Workshop on Statistical Machine Translation, pp. 105-109.

[33] KommaluriVijayanand,(2009)"TestingandPerformanceEvaluationofMachine Transliteration System for Tamil Language", Proceedings of the 2009 NEWS, pp. 48–51.

[34] Finch,A.&Sumita,E,(2009)"TransliterationbyBidirectionalStatisticalMachine Translation", Proceedings of the 2009 Named Entities Workshop, pp. 52-56.

[35] XueJiang,LeSun&DakunZhang,(2009)"ASyllable-BasedNameTransliteration System", Proceedings of the 2009 Named Entities Workshop, Singapore, pp. 96–99.

[36] Vijaya M.S.et al.,(2009)"Englishto TamilTransliterationusingWEKA", International Journal of Recent Trends in Engineering, Vol. 1, No. 1, pp. 498-500.

[37] Das A., Ekbal A.,Mandal T.&Bandyopadhyay S,(2009) "English to Hindi Machine TransliterationSystematNEWS",Proceedingsofthe2009NamedEntitiesWorkshoppp.80-83.[38]ChaiWutiwiwatchaiandAusdangThangthai,(2010)"Syllable-basedThai-English Machine Transliteration", Named Entities Workshop Sweden pp. 66-70.

[39] Josan,G.&Lehal,G,(2010)"APunjabitoHindiMachineTransliterationSystem",

Computational Linguistics and Chinese Language Processing, Vol. 15, No. 2, pp. 77-102, 2010.

[40] Chinnakotla M K, Damani O P, and Satoskar A, (2010) "Transliteration for Resource-Scarce Languages", ACM Transactions on Asian Language Information Processing, 9, 4, pp. 1-30.

[41] FehriH et al., (2011) "Recognition and Translation ofArabic Named Entities with NooJ UsingaNew Representation Model", 9th InternationalWorkshoponFSMand NLP, pp.134–142.

[42] Deep, K. &Goyal, V, (2011) "Development of a Punjabi to English Transliteration System", International Journal of Computer Science and Communication, Vol. 2, No. 2, pp. 521-526.[43]Kaur,J.&Josan,G,(2011)"StatisticalApproachtoTransliterationfromEnglish to Punjabi", International Journal on Computer Science and Engineering, Vol. 3, No. 4, pp. 1518-1527.

[44] Josan, G. &Kaur, J, (2011) "Punjabi To Hindi Statistical Machine Transliteration", International Journal of Information Technology and Knowledge Management, pp. 459-463.

[45] DhoreManikraoL,Dixit ShantanuKandSonwalkarTusharD,(2012)"HinditoEnglish Machine Transliteration of Named Entities using Conditional Random Fields", International Journal of Computer Applications, Vol. 48– No.23, pp. 31-37.

[46] Sharma S. Et al., (2012) "English-Hindi Transliteration using Statistical Machine Translation in different Notation", International Conference on Computing and Control Engineering.

[47] Kumar, P. and Kumar, V, (2013) "Statistical Machine Translation Based Punjabi to English Transliteration System for Proper Nouns", International Journal of Application or Innovation in Engineering & Management, Vol. 2, Issue 8, pp. 318-321.

[48] RathodPH,DhoreMLandDhoreRM,(2013)"HindiAndMarathiToEnglishMachine Transliteration UsingSVM", International Journal on Natural Language Computing (IJNLC) Vol. 2, No.4, pp. 55-71.

[49] Bhalla, D. and Joshi, N, (2013) "Rule Based Transliteration Scheme For English To Punjabi", International Journal on Natural Language Computing, Vol. 2, No. 2, pp. 67-73.

[50] Joshi, H., Bhatt, A. & Patel. H, (2013) "Transliterated Search using Syllabification Approach", Forum for Information Retrieval Evaluation.

[51] Arbabi M, Fischthal S M, Cheng V C & Bart E, (1994) "Algorithms for Arabic Name Transliteration", IBM Journal of Research and Development, pp. 183-194.

[52] Stephen Wan & Cornelia Maria Verspoor, (1998) "Automatic English-Chinese Name Transliteration for Development of Multilingual Resources", NSW 2109, pp. 1352-1356.

[53] Stalls, B.&KnightK,(1998)"TranslatingNamesandTechnicalTermsinArabicText", COLING ACL Workshop on Computational Approaches to Semitic Languages, pp. 34-41, 1998.

[54] Lee J S, (1999) "An English-Korean Transliteration and Re-transliteration Model for Cross-Lingual Information Retrieval", Computer Science Dept., KAIST.

[55] Jeong K S et al., (1999) "Automatic Identification and Back-Transliteration of Foreign Words for Information Retrieval", Information Processing and Management, 35, 4, pp. 523–

540.

[56] JungSYetal.,(2000)“AnEnglishtoKoreanTransliterationModelofExtendedMarkov Window”, InProceedings ofthe18thConference onComputationallinguistics,pp.383–389.

[57] Meng H et al., (2001) “Generating Phonetic Cognates to Handle Named Entities in English-Chinese Cross-Language Spoken Document Retrieval”, ASRU '01, pp. 311-314.

[58] Oh J H, & Choi K S, (2002) “An English-Korean Transliteration Model using Pronunciation and Contextual Rules”, In Proceedings of COLING 2002, pp. 758-764.

[59] LinWH&ChenHH,(2002)“BackwardMachineTransliterationbyLearningPhonetic Similarity”, In Proceedings of the 6th Conference on Natural Language Learning, pp. 1–7.

[60] Yan,Qetal.,(2003)“AutomaticTransliterationForJapanese-to-EnglishTextRetrieval”, ACMSIGIRConferenceonResearchandDevelopmentinInformationRetrieval,pp.353-360.

[61] Paola Virgaet al.,(2003) “TransliterationofProperNames in Cross-Lingual Information Retrieval”, Proceedings of the ACL Workshop on Multilingual and Mixed-language NER.

[62] GaoW,WongKF,&LamW,(2004)“ImprovingTransliterationwithPreciseAlignment of Phoneme Chunks and Using Contextual Features”, vol. 3411, Springer, Berlin, pp. 106– 117.

[63] GaoW,WongKF,&LamW,(2004)“Phoneme-basedTransliterationofForeignNames for OOV Problem”, First IJCNLP, vol. 3248, Springer, pp. 110–119.

[64] DebasisMandal, D., Dandapat, S., Gupta, M., Banerjee, P. &Sarkar, S, (2007) “Bengali and Hindi to English CLIR Evaluation”, Cross-Language Evaluation Forum CLEF, pp. 95-102.

[65] HarshitSurana& Anil Kumar Singh, (2008) “A More Discerning and Adaptable Multilingual Transliteration Mechanism for Indian Languages”, Proceedings of the Third IJCNLP, pp. 64-71.

[66] Saha S et al., (2008) “NE Recognition in Hindi Using Maximum Entropy and Transliteration”.

[67] M L Dhore, S K Dixit and J B Karande, (2011) “Cross Language Representation for Commercial Web Applications in Context of Indian Languages using Phonetic model”, CiiT International Journal of Artificial Intelligent Systems and Machine Learning, Volume 3, No. 4, pp 174-179.

[68] MLDhoreandSKDixit,(2011)“DevelopmentofBilingualApplicationUsingMachine Transliteration: A Practical Case Study”, CiiT International Journal of Artificial Intelligent Systems and Machine Learning, Volume 3, No. 13, pp 859-864.

[69] M L Dhore, S K Dixit and R M Dhore, (2012) “Hindi and Marathi to English NE Transliteration ToolusingPhonologyand Stress Analysis”, 24th International Conference on Computational Linguistics, Proceedings of COLING: Demonstration Papers, at III, Bombay, pp 111-118.

[70] Al-Onaizan& Knight K, (2002) “Machine Transliteration of Names in Arabic Text”, Proceedings of the ACL Workshop on Computational Approaches to Semitic Languages.

[71] BilacS,&TanakaH,(2004)“ImprovingBack-TransliterationbyCombiningInformation Sources”, In Proceedings of IJCNLP2004, pp. 542-547.

[72] OhJ H&ChoiKS,(2005)“Machine Learning BasedEnglish-to-KoreanTransliteration usingGraphemeandPhonemeInformation”, IEICETransactiononInformationandSystems.

[73] OhJH&ChoiKS, (2006)“AnEnsembleofTransliterationModelsforInformation Retrieval”, Information Processing and Management, 42, 4, pp. 980–1002.

[74] AbbasMaliketal,(2009)“AHybridModelforUrduHindiTransliteration”,Proceedings of the 2009 Named Entities Workshop, ACL-IJCNLP 2009, pages 177–185.

[75] M L Dhore, S K Dixit and R M Dhore, (2012) “Optimizing Transliteration for Hindi/Marathi to English Using only Two Weights”, Proceedings of the First International WorkshoponOptimizationTechniquesforHumanLanguageTechnology,COLING,IITB,pp 31–48,

[76] Oh J H and Ishara H, (2007) “Machine Transliteration using Multiple Transliteration Engines and Hypothesis Re-Ranking”, In Proceedings of the 11th Machine Translation Summit.

[77] SarvnazKarimi, (2008) “Machine Transliteration of Proper Names between English and Persian”, Thesis, RMIT University, Melbourne, Victoria, Australia.

SENTIMENTANALYSISONPRODUCTFEATURESBASEDONLEXICON APPROACH USING NATURAL LANGUAGE PROCESSING

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ABSTRACT

Sentiment analysis has played an important role in identifying what other people think and what theirbehavioris. Textcanbeusedto analyzethe sentimentand classified aspositive,negative or neutral. Applying the sentiment analysis on the product reviews on e-market helps not only the customer but also the industry people for taking decision. The method which provides sentiment analysis about the individual product's features is discussed here. This paper presents the use of Natural Language Processing and SentiWordNet in this interesting application in Python: 1. Sentiment Analysis on Product review [Domain: Electronic]2. sentiment analysis regarding the product's feature present in the product review [Sub Domain: Mobile Phones]. It usesa lexicon based approach in which text is tokenized for calculating the sentiment analysis of the product reviews on a e-market. The first part of paper includessentiment analyzer whichclassifiesthe sentiment present in product reviews into positive, negative or neutral depending on the polarity. The second part of the paper is an extension to the first part in which the customer review's containing product's features will be segregated and then these separated reviews are classified into positive, negative and neutral using sentiment analysis. Here, mobile phones are used as the product with features as screen, processors, etc. This gives a business solution for users and industries for effective product decisions.

KEYWORDS

Sentiment Analysis, Natural Language Processing,Senti WordNet,lexiconbasedapproach

Full Text:https://aircconline.com/ijnlc/V8N3/8319ijnlc01.pdf

Volume URL:https://airccse.org/journal/ijnlc/vol8.html

REFERENCES

[1] Allen,James,"NaturalLanguageUnderstanding",Secondedition(RedwoodCity: Benjamin/Cummings, 1995).

[2] Baxendale,P.(1958).Machine-madeindexfortechnicalliterature-anexperiment.IBM Journal of Research Development, 2(4):354–361. [2, 3, 5]

[3] BirdSteven,KleinEwan,LoperEdwardJune2009,"NaturalLanguageProcessingwith Python", Pages 16,27,79

[4] Cortez Eli, Altigran S da da Silva 2013, " Unsupervised Information Extraction by Text Segmentation", Ch 3

[5] KumarEla,"ArtificialIntelligence",Pages313-315

[6] Goddard Cliff Second edition 2011,"Semantic Analysis: A practical introduction ", Section 1.1- 1.5

[7] LukaszewskiAlbert2010,"MySQLforPython",Ch1,2,3

[8] Manning Christopher D., SchützeHinrich Sixth Edition 2003,"Foundations of Statistical Natural Language Processing", Ch 4 Page no. 575 [9] Martelli Alex Second edition July 2006, "Python in a Nutshell", Pages 44,201. [10] Natural Language Toolkit, Retrieved from http://www.nltk.org

[11] Pattern2.6,Retrievedfrom http://www.clips.ua.ac.be/pattern

[12] PrasadReshma,MaryPriyaSebastian,InternationalJournalonNaturalLanguageComputing (IJNLC) Vol. 3, No.2, April 2014, " A survey on phrase structure learning methods for text classification"

[13] Python Language, Retrieved from https://www.python.org/ [14] Rodrigues Mário , Teixeira António , "Advanced Applications of Natural Language Processing for Performing ", Ch 1,2,4

[15] Sobin Nicholas 2011, "Syntactic Analysis: The Basics", Ch 1,2 [16] Swaroop C H, “A Byte of Python: Basics and Syntax of Python”, Ch 5,8,9,10

[17]TextBlob:SimplifiedTextProcessing,Retrievedfromhttp://textblob.readthedocs.org/en/dev

[18] ThanosCostantino ,"Research and Advanced Technology for Digital Libraries", Page 338-362 [19] Tosi Sandro November 2009, "Matplotlib for Python Developers", Ch 2,3

[20]AashutoshBhattetal,/(IJCSIT)InternationalJournalofComputerScienceand Information Technologies, Vol. 6 (6) , 2015, 5107-5110

[21] Akshaya R. Garjeet al, International Journal of Advanced Research in Computer Science, 8(9), Nov– Dec, 2017,554-557 [22] Andrea Esuli and Fabrizio Sebastiani. 2006. SENTIWORDNET:A publicly available lexical resource for opinion mining. In Proceedings of the 5thConferenceon LanguageResources and Evaluation(LREC’06), pages417–422, Genova, IT.

[23] Bo Pang and Lillian Lee. 2008. Opinion mining and sentiment analysis. Foundations and Trends in Information Retrieval, 2(1/2):1–135.

ALGORITHMFORTEXTTOGRAPHCONVERSIONANDSUMMARIZINGUSING NLP: A NEW APPROACH FOR BUSINESS SOLUTIONS

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ABSTRACT

Text can beanalysed bysplittingthe text and extractingthekeywords .Thesemayberepresented as summaries, tabular representation, graphical forms, and images. In order to provide a solution tolargeamountofinformationpresentintextualformatledtoaresearchofextractingthetextand transforming the unstructured form to a structured format. The paper presents the importance of Natural Language Processing (NLP) and its two interesting applications in Python Language: 1. Automatic text summarization [Domain: Newspaper Articles] 2. Text to Graph Conversion [Domain:Stocknews].ThemainchallengeinNLPisnaturallanguageunderstandingi.e.deriving meaningfromhumanornaturallanguageinputwhich isdoneusingregularexpressions,artificial intelligenceanddatabaseconcepts.AutomaticSummarizationtoolconvertsthenewspaperarticles into summaryonthe basisoffrequencyofwordsinthe text.Textto GraphConvertertakes inthe inputasstockarticle,tokenizethemonvariousindex(pointsandpercent)andtimeandthentokens are mapped to graph. This paper proposes a business solution for users for effective time management.

KEYWORDS

NLP, Automatic Summarizer, Text to Graph Converter, Data Visualization, Regular Expression, Artificial Intelligence

Full Text:https://airccse.org/journal/ijnlc/papers/4415ijnlc03.pdf

Volume URL:https://airccse.org/journal/ijnlc/vol4.html

REFERENCES

[1] Allen,James,"NaturalLanguageUnderstanding",Secondedition(RedwoodCity: Benjamin/Cummings, 1995).

[2] Baxendale,P.(1958).Machine-madeindexfortechnicalliterature-anexperiment.IBM Journal of Research Development, 2(4):354–361. [2, 3, 5]

[3] BeautifulSoup44.3.2,Retrievedfromhttps://pypi.python.org/pypi/beautifulsoup4

[4] Bird Steven, Klein Ewan, Loper Edward June 2009, "Natural Language Processing with Python", Pages 16,27,79[5]CortezEli,Altigran S dadaSilva2013, "Unsupervised Information Extraction by Text Segmentation", Ch 3

[6] Economic Times Archives Jan 2014-Dec 2014, Retrieved from http://economictimes.indiatimes.com/

[7] Edmundson, H. P. (1969). New methods in automatic extracting. Journal of the ACM, 16(2):264–285. [2, 3, 4]

[8] FriedlJeffreyE.F.August 2006,"MasteringRegularExpressions",Ch1

[9] Goddard Cliff Second edition 2011,"Semantic Analysis: A practical introduction ", Section 1.1- 1.5

[10] KumarEla,"ArtificialIntelligence",Pages313-315

[11] Luhn, H. P. (1958). The automatic creation of literature abstracts. IBM Journal of Research Development, 2(2):159–165. [2, 3, 6, 8]

[12] LukaszewskiAlbert2010,"MySQLforPython",Ch1,2,3

[13] Manning Christopher D., Schütze Hinrich Sixth Edition 2003,"Foundations of Statistical Natural Language Processing", Ch 4 Page no. 575

[14] MartelliAlexSecondeditionJuly2006,"PythoninaNutshell",Pages 44,201.

[15] Natural Language Toolkit, Retrieved from http://www.nltk.org [16] Pattern 2.6, Retrieved from http://www.clips.ua.ac.be/pattern

[17] PrasadReshma,MaryPriyaSebastian,InternationalJournalonNaturalLanguageComputing (IJNLC) Vol. 3, No.2, April 2014, " A survey on phrase structure learning methods for text classification"

[18] PressmanRodgerS6thedition,"SoftwareEngineering–APractitioner'sApproach"

[19] PythonLanguage,Retrievedfromhttps://www.python.org/

[20] Rodrigues Mário , Teixeira António , "Advanced Applications of Natural Language Processing for Performing ", Ch 1,2,4

[21] Stubblebine Tony, "Regular Expression Pocket Reference: Regular Expressions for Perl, Ruby, PHP, Python, C, Java and .NET " [22] Sobin Nicholas 2011, "Syntactic Analysis: The Basics", Ch 1,2

[23] SwaroopCH,"AByteofPython:BasicsandSyntaxofPython",Ch5,8,9,10

[24] TextBlob:SimplifiedTextProcessing,Retrievedfromhttp://textblob.readthedocs.org/en/dev

[25] Thanos Costantino ,"Research and Advanced Technology for Digital Libraries", Page 338-362

[26] TosiSandroNovember2009,"MatplotlibforPythonDevelopers",Ch2,3.

AMBIGUITYRESOLUTIONININFORMATION RETRIEVAL

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ABSTRACT

With the advancement of the web it is verydifficult to keep up with the amplifying requirements of learning on web, to satisfy user's expectation. Users demand with the updated and accurate results. To solve the queries Search Engines use different techniques. Google the most famous searchengineusesPageRankingAlgorithm.RankingAlgorithmsarrangetheresultsaccordingto the user's needs. This paper deals with "Page Rank Algorithm". Our proposed algorithm is an extension of page rank algorithm which refines the results so that user gets what he/she expects. We have used a measure Average Precision to compare Page Rank algorithm and the proposed algorithm, and proved that our algorithm provides better results.

KEYWORDS

Informationretrieval, pagerankingalgorithms, weightedpagerank

Full Text:https://airccse.org/journal/ijnlc/papers/2113ijnlc01.pdf

Volume URL:https://airccse.org/journal/ijnlc/vol2.html

REFERENCES

[1] AshutoshKumarSingh,RaviKumarP,AComparativestudyofPageRankingAlgorithmsfor Information Retrieval, International Journal of Electrical and Computer Engineering 4:7 2009

[2] DavidHawkin,WebSearchEngines,CSIROICT Center

[3] EricJ.Glover,SteveLawrence,MichaelD.Gordon,WilliamP.Birmingham,C.LeeGiles, WebSearch– YourWay

[4] "InformationRetrival"availableathttp://en.wikipedia.org/wiki/Information_retrieval

[5] J. Kleinberg, "Authoritative Sources in a Hyper-Linked Environment", Journal of the ACM 46(5), pp. 604-632, 1999.

[6] J.Kleinberg,"Hubs,AuthoritiesandCommunities",ACMComputingSurveys,31(4),1999.

[7] L. Page, S. Brin, R. Motwani, and T. Winograd, "The Pagerank Citation Ranking: Bringing order to the Web". Technical Report, Stanford Digital Libraries SIDL-WP-1999-0120, 1999.

[8] "PrecisionandRecall"availableathttp://en.wikipedia.org/wiki/Precision_and_recall

[9] R.Cooley,B.MobasherandJ.Srivastava,"WebMinig:InformationandPatternDiscoveryon the World Wide Web". Proceedings of the 9th IEEE International Conference on Tools with Artificial Intelligence, pp. (ICTAI'97), 1997.

[10] R. Kosala, H. Blockeel, "Web Mining Research: A Survey", SIGKDD Explorations, NewsletteroftheACMSpecialInterestGrouponKnowledgeDiscoveryandDataMiningVol.2, No. 1 pp 1-15, 2000.

[11] S. Brin, and L. Page, The Anatomy of a Large Scale Hypertextual Web Search Engine, Computer Network and ISDN Systems, Vol. 30, Issue 1-7, pp. 107-117,1998.

[12] W. Xing and Ali Ghorbani, "Weighted PageRank Algorithm", Proc. Of the Second Annual Conference on Communication Networks and Services Research (CNSR '0), IEEE, 2004.

HINDIANDMARATHITOENGLISHMACHINETRANSLITERATIONUSINGSVM

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ABSTRACT

Language transliteration is one of the important areas in NLP. Transliteration is very useful for convertingthenamedentities(NEs)writteninonescripttoanotherscriptinNLPapplicationslike CrossLingualInformationRetrieval(CLIR),MultilingualVoiceChatApplicationsandRealTime Machine Translation (MT). The most important requirement of Transliteration system is to preserve the phonetic properties of source language after the transliteration in target language. In this paper, we have proposed the named entitytransliteration for Hindi to English and Marathito English language pairs using Support Vector Machine (SVM). In the proposed approach, the source named entity is segmented into transliteration units; hence transliteration problem can be viewed as sequence labeling problem. The classification of phonetic units is done by using the polynomialkernelfunctionofSupportVectorMachine(SVM).Proposedapproachusesphonetic of the source language and n-gram as two features for transliteration.

KEYWORDS

MachineTransliteration,n-gram,SupportVectorMachine, Syllabification

Full Text:https://airccse.org/journal/ijnlc/papers/2413ijnlc04.pdf

Volume URL:https://airccse.org/journal/ijnlc/vol2.html

REFERENCES

[1] PadariyaNilesh,ChinnakotlaManoj,NageshAjay,DamaniOmP.(2008)"EvaluationofHindi to English, Marathi to English and English to Hindi", IIT Mumbai CLIR at FIRE.

[2] Saha Sujan Kumar, Ghosh P. S, Sarkar Sudeshna and Mitra Pabitra (2008) "Named entity recognitioninHindiusingmaximumentropyandtransliteration."

[3] [3]BIS(1991)"Indianstandard code for information interchange (ISCII)", Bureau of Indian Standards, New Delhi.

[4] JoshiRK,ShroffKeyurandMudurSP(2003)"APhonemiccodebasedschemeforeffective processing of Indian languages", National Centre for Software Technology, Mumbai, 23rd Internationalization and Unicode Conference, Prague, Czech Republic, pp 1-17.

[5] Arbabi M, Fischthal S M, Cheng V C and Bart E (1994) "Algorithms for Arabic name transliteration", IBM Journal of Research and Development, pp 183-194.

[6] KnightKevinandGraehlJonathan(1997)"Machinetransliteration",Inproceedingsofthe35th annual meetings of the Association for Computational Linguistics, pp 128-135.

[7] Stalls Bonnie Glover and Kevin Knight (1998) "Translating names and technical terms in Arabic text."

[8] Al-Onaizan Y, Knight K (2002) "Machine translation of names in Arabic text", Proceedings of the ACL conference workshop on computational approaches to Semitic languages.

[9] JaleelNasreenAbdulandLarkeyLeahS.(2003)"StatisticaltransliterationforEnglish-Arabic cross language information retrieval", In Proceedings of the 12th international conference on information and knowledge management, pp 139 – 146.

[10] JungS. Y.,HongS., S.,Paek E.(2003) "English to Koreantransliteration model ofextended Markovwindow", InProceedings ofthe 18thConferenceon Computational Linguistics, pp 383–389.

[11] Ganapathiraju M., Balakrishnan M., Balakrishnan N., Reddy R. (2005) "OM: One Tool for Many (Indian) Languages", ICUDL: International Conference on Universal Digital Library, Hangzhou.

[12] MalikMGA(2006)"PunjabiMachineTransliteration",Proceedingsofthe21stInternational ConferenceonComputationalLinguisticsandthe44thannualmeetingoftheACL,pp1137–1144.

[13] Sproat R.(2002) "Brahmi scripts, In Constraints on Spelling Changes", Fifth International Workshop on Writing Systems, Nijmegen, The Netherlands.

[14] Sproat R.(2003) "A formal computational analysis of Indic scripts", In International Symposium on Indic Scripts: Past and Future, Tokyo.

[15] Sproat R.(2004) "A computational theory of writing systems, In Constraints on Spelling Changes", Fifth International Workshop on Writing Systems, Nijmegen, The Netherlands.

[16] Kopytonenko M. , Lyytinen K. , and Krkkinen T.(2006) "Comparison of phonological representationsforthegrapheme-to-phonememapping,InConstraintsonSpellingChanges",Fifth International Workshop on Writing Systems, Nijmegen, The Netherlands.

[17] Ganesh S, Harsha S, Pingali P, and Verma V (2008) "Statistical transliteration for cross languageinformationretrievalusingHMMalignmentandCRF",InProceedingsoftheWorkshop on CLIA, Addressing the Needs of Multilingual Societies.

[18] Sumaja Sasidharan, Loganathan R, and Soman K P (2009) "English to Malayalam Transliteration Using Sequence Labeling Approach" International Journal of Recent Trends in Engineering, Vol. 1, No. 2, pp 170-172

[19] Oh Jong-Hoon, Kiyotaka Uchimoto, and Kentaro Torisawa (2009) "Machine transliteration using target-language grapheme and phoneme: Multi-engine transliteration approach", Proceedings of the Named Entities Workshop ACL-IJCNLP Suntec, Singapore,AFNLP, pp 36–39

[20] AntonyP.J,SomanK.P(2010)"KernelMethodforEnglishtoKannadaTransliteration",

ConferenceonMachineLearningandCybernetics,pp11-14
[21] Ekbal A. and Bandyopadhyay S. (2007) "A Hidden Markov Model based named entity recognition system: Bengali and Hindi as case studies", Proceedings of 2nd International conference in Pattern Recognition and Machine Intelligence, Kolkata, India, pp 545–552.
[22] Ekbal A. and Bandyopadhyay S. (2008) "Bengali named entity recognition using support vector machine", In Proceedings of the IJCNLP-08 Workshop on NER for South and South East Asian languages, Hyderabad, India, pp 51–58.
[23] Ekbal A. and Bandyopadhyay S. (2008), "Development of Bengali named entity tagged corpus and its use in NER system", In Proceedings of the 6th Workshop on Asian Language Resources.
[24] EkbalA.andBandyopadhyayS.(2008)"Aweb-basedBengalinewscorpusfornamedentity recognition", Language Resources & Evaluation, vol. 42, pp 173–182.
[25] Ekbal A. and Bandyopadhyay S.(2008) "Improving the performance of a NER system by postprocessing and voting", In Proceedings of Joint IAPR International Workshop on Structural Syntactic and Statistical Pattern Recognition, Orlando, Florida, pp 831–841.
[26] EkbalA.and BandyopadhyayS.(2009) "Bengali Named EntityRecognition using Classifier Combination", In Proceedings of Seventh International Conference on Advances in Pattern Recognition, pp 259–262.
[27] Ekbal A. and Bandyopadhyay S. (2009) "Voted NER system using appropriate unlabelled data", In Proceedings of the Named Entities Workshop, ACL-IJCNLP.
[28] Ekbal A. and Bandyopadhyay S. (2010) " Named entity recognition using appropriate unlabeled data, post-processing and voting", In Informatica, Vol 34, No. 1, pp 55-76.
[29] Chinnakotla Manoj K., Damani Om P., and Satoskar Avijit (2010) "Transliteration for ResourceScarce Languages", ACM Trans. Asian Lang. Inform,Article 14, pp 1-30.
[30] KishorjitNongmeikapam(2012)"TransliteratedSVMBasedManipuriPOSTagging", AdvancesinComputerScienceandEngineeringandApplications,pp989-999
[31] K.P.Sonam, V. Ajay, R. Laganatha.(2009) "Machine Learning with SVM and Other Kernel Methods", Machine Learning Book, PHI.
[32] Koul Omkar N. (2008) "Modern Hindi Grammar", Dunwoody Press [33] Walambe M. R. (1990) "Marathi Shuddalekhan", Nitin Prakashan, Pune
[34] WalambeM.R.(1990)"MarathiVyakran",NitinPrakashan,Pune
[35] Dhore M L, Dixit S K and Dhore R M (2012) "Hindi and Marathi to English NE Transliteration Tool using Phonology and Stress Analysis", 24th International Conference on Computational Linguistic,s Proceedings of COLING Demonstration Papers, at IIT Bombay, pp 111-118