Rajaswa R. **Patil**

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Education

Birla Institute of Technology and Science, Pilani (Goa Campus)   *Goa, India*

B.E. IN ELECTRICAL & ELECTRONICS ENGINEERING   *Aug 2017 - Jun 2021*

- **Bachelor's Thesis :** Computational Modelling for Coherence in Spoken Discourse
- **Academic Projects:** [1] Psycholinguistic models of Spoken Word Processing; [2] Data-driven models of Indian Maritime Trade
- **Research Interests:** [1] Multilingual NLP; [2] Spoken Language Processing; [3] Discourse & Pragmatics; [4] Computational Psycholinguistics; [5] Language Assessment & Planning ; [6] Multimodal Learning

Experience

MIDAS Lab (IIIT Delhi)   *Delhi, India*

RESEARCH ASSISTANT   *Dec. 2019 - Present*

- Currently, leading a team of research interns on projects related to modelling various aspects of ESL speakers' speech, like fluency, language complexity, discourse content & coherence
- Currently, working on modelling structure & coherence in spontaneous spoken discourses
- Contributed towards building a speech scoring system for ESL speakers (under a collaboration with Second Language Testing, Inc.)
- **Supervised By: Prof. Rajiv Ratn Shah (Dept. of CSE & HCD, IIIT Delhi)**

Cognitive Neuroscience Lab (BITS Goa)   *Goa, India*

PROJECT ASSISTANT   *Aug. 2019 - Present*

- Currently, leading a team of undergraduate students on various projects related to Syntactic processing for Indic languages, Grounded Language Learning, Mental Lexicon Development and EEG-based brain imagery
- Designed and implemented an experiment for EEG data collection (6 subjects with 200 trials each) to inspect the role of low-level visual representations in spoken word processing
- Used the collected EEG data to inspect the role of Brodmann Areas (BA-18 & BA-19) in spoken word processing with generative & sequential deep neural-network models
- Worked on modelling causal reasoning in natural language texts with multi-head self-attention based deep neural-network models
- **Supervised By: Prof. Veeky Baths (Dept. of Biological Sciences, BITS Pilani Goa Campus)**

NCETIS, Indian Institute of Technology Bombay   *Mumbai, India*

SUMMER INTERN   *May. 2019 - Jul. 2019*

- Implemented various models for aspect-based sentiment analysis in open-domain texts
- Built a pipeline for data-domain independent opinion-mining in natural language texts
- Built various text-based utilities for entity resolution, topic extraction, theme extraction and lexicon-based sentiment polarity extraction
- **Supervised By: Prof. Ganesh Ramakrishnan (Dept. of CSE, IIT Bombay)**

Central Drug Research Institute (CSIR-CDRI)   *Lucknow, India*

REMOTE INTERN   *Jan. 2019 - Mar. 2019*

- Studied & summarized various machine learning based approaches for Brain Machine Interface
- Built a web scraper for monitoring the web-based Indian news coverage on various diseases
- Analysed the scraped news-articles data with topic modeling & graph-based text ranking algorithms
- **Supervised By: Dr. Sukant Khurana (Neuroscientist, CSIR-CDRI)**

Publications

Towards Modelling Coherence in Spoken Discourse*   *Under Review**

LONG PAPER   *2020*

Rajaswa Patil*, Yaman Kumar*, Rajiv Ratn Shah, Mika Hama, Roger Zimmermann, Amanda Stent

Vyākarana: A Colorless Green Benchmark for Syntactic Evaluation in Indic Languages*   *Under Review**

LONG PAPER   *2020*

Rajaswa Patil*, Jasleen Dhillon, Siddhant Mahurkar, Saumitra Kulkarni, Manav Malhotra, Veeky Baths

BPGC at SemEval-2020 Task 11: Propaganda Detection in News Articles with Multi-Granularity Knowledge Sharing and Linguistic Features based Ensemble Learning   *SemEval @ COLING*

LONG PAPER   *2020*

Rajaswa Patil*, Somesh Singh*, Swati Agarwal

CNRL at SemEval-2020 Task 5: Modelling Causal Reasoning in Language with Multi-Head Self-Attention Weights based Counterfactual Detection *SemEval @ COLING*

SHORT PAPER *2020*

Rajaswa Patil*, Veeky Baths

LRG at SemEval-2020 Task 7: Assessing the Ability of BERT and Derivative Models to Perform Short-Edits based Humor Grading *SemEval @ COLING*

SHORT PAPER *2020*

Siddhant Mahurkar, **Rajaswa Patil**

Word2Brain2Image: Visual Reconstruction from Spoken Word Representations *ACCS*

POSTER *2019*

Ajay Subramanian*, **Rajaswa Patil***, Veeky Baths

Citta: A Lite Semantic Recommendation Framework for Digital Libraries *NDLI-UNESCO KEDL*

POSTER *2019*

Rajaswa Patil*, Siddhant Mahurkar

Teaching

2020-21	**Teaching Assistant**, Introduction to Cognitive Neuroscience	*Elective Course*
2020-21	**Teaching Assistant**, Neuroscience and AI	*Reading Course*
2019-20	**Instructor**, Introduction to Machine Learning & Deep Learning	*Technical Course*
2019-20	**Project Lead**, Applied Machine Learning (NLP Applications)	*Technical Project*
2019-20	**Project Mentor**, Deep Learning with PyTorch	*Summer Project*

Projects

DecepticoNLP *NLP & DL*

OPEN SOURCED LIBRARY *May. 2020 - Present*

- DecepticoNLP is a Python library for robustness monitoring and adversarial debugging of NLP models
- DecepticoNLP has implementations of various character & word level adversarial perturbations for text
- **URL:** https://github.com/SforAiDl/decepticonlp

Semantic Search Framework for Digital Libraries *NLP & IR*

WEB APPLICATION *Nov. 2019 - Dec. 2019*

- Developed a semantic search framework for Digital Libraries with a BERT-based approach
- Built a Python-Flask based web-app for the semantic search framework
- **URL:** https://github.com/rajaswa/BERT-For-Semantic-Recommendation

Twitter-Bot for Disaster Management *NLP & IR*

WEB APPLICATION *Sept. 2018 - Oct. 2018*

- Built a pipeline involving Twitter-API based Tweet Streaming, Deep Learning based text-classification & ILP based text-summarization
- Deployed the bot on Microsoft Azure cloud & tested successfully with the data from Indonesia 2018 earthquake
- **URL:** https://github.com/rajaswa/Disaster-Management

Grants & Awards

GRANTS

2020	**25,000 INR**, Cognitive Models of Lexicon Development	*CNRL, BITS Goa*
2020	**25,000 INR**, Syntactic Evaluation & Processing in Indic Languages	*CNRL, BITS Goa*
2019	**20,000 INR**, Low-level Visual Representations of Spoken Word Processing	*CNRL, BITS Goa*

AWARDS

2019	**Best Poster Award**, International Symposium on Knowledge Engineering for Digital Library Design	*KEDL, IIT Delhi*

Community

Kaggle	Expert on the Kaggle Competitions platform
LRG	Group Lead at the Student Language Research Group (LRG - BITS Goa)
SAiDL	Core Member at the Society for AI & Deep Learning (SAiDL - BITS Goa)
Nirmaan	Volunteer work for Employment Operations at Nirmaan NGO (2019)