

# Rajaswa R. Patil

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## Education

### BITS Pilani (Goa Campus)

B.E. IN ELECTRICAL & ELECTRONICS ENGINEERING

Goa, India

Aug. 2017 - Present

- **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] Discourse & Pragmatics; [3] Computational Psycholinguistics; [4] Multimodal Learning; [5] L1 & L2 Language Processing; [6] Speech Representation Learning

## Publications

### 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

BEST POSTER AWARD

2019

Rajaswa Patil\*, Siddhant Mahurkar

## 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

SUMMER INTERN

Mumbai, India

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)

REMOTE INTERN

Lucknow, India

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)**

## Leadership & 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

### NLP-Probes

NLP & DL

OPEN SOURCED LIBRARY\*

Sep. 2020 - Present

- NLP-Probes is a Python library built on top of HuggingFace's transformers library to perform probing tasks on neural language models
- NLP-Probes comes with a set of tutorials on standard semantic and syntactic probing tasks
- **URL:** \*This project has not been publicly open-sourced as of now.

### 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>

## 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)

## References

**Rajiv Ratn Shah**  
Assistant Professor  
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IIIT Delhi  
New Delhi, India  
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