

# 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

### Vyākaranā: A Colorless Green Benchmark for Syntactic Evaluation in Indic Languages\*

Under Review\*

LONG PAPER

2021

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

### Towards Modelling Coherence in Spoken Discourse\*

Under Review\*

LONG PAPER

2021

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

### 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

SHORT PAPER

Rajaswa Patil\*, Veeky Baths

SemEval @ COLING

2020

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

SHORT PAPER

Siddhant Mahurkar, Rajaswa Patil

SemEval @ COLING

2020

## Word2Brain2Image: Visual Reconstruction from Spoken Word Representations

POSTER

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

ACCS

2019

## Citta: A Lite Semantic Recommendation Framework for Digital Libraries

POSTER

Rajaswa Patil\*, Siddhant Mahurkar

NDLI-UNESCO KEDL

2019

## 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

OPEN SOURCED LIBRARY

- 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>

NLP & DL

May, 2020 - Present

### Semantic Search Framework for Digital Libraries

WEB APPLICATION

- 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>

NLP & IR

Nov. 2019 - Dec. 2019

### Twitter-Bot for Disaster Management

WEB APPLICATION

- 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>

NLP & IR

Sept. 2018 - Oct. 2018

## 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

**LRG** Group Lead at the Student Language Research Group (LRG - BITS Goa) [[website](#)]

**Kaggle** Expert on the Kaggle Competitions platform [[profile](#)]

**SAIDL** Core Member at the Society for AI & Deep Learning (SAIDL - BITS Goa) [[website](#)]

**Nirmaan** Volunteer work for Employment Operations at Nirmaan NGO (2019) [[website](#)]