

# Rajaswa Patil

## Pre-Doctoral Research Fellow | TCS Research

[Website](#) [@ E-mail](#) [Github](#) [Google Scholar](#) [Semantic Scholar](#) [Twitter](#) [LinkedIn](#)

### Education





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|------------------------------------|---|-------------------|
| <b>Jun 2021</b><br><b>Aug 2017</b> | <b>Birla Institute of Technology and Science (BITS) Pilani</b><br>Bachelor in Engineering, Electrical & Electronics<br><br>CGPA: 8.26/10.00<br><b>Thesis:</b> Computational Modelling for Coherence in Spoken Discourse <a href="#">📄</a><br><b>Study in Advanced Topics:</b> [1] Meta Learning; [2] Computational Neuroscience | <b>Goa, India</b> |
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### Experience

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|------------------------------------|--|----------------------------------|
| <b>Present</b><br><b>Jul 2021</b>  | <b>Tata Consultancy Services (TCS) - Research   Deep Learning &amp; AI Group</b> <a href="#">🌐</a><br><i>Pre-Doctoral Research Fellow   Advisors: Dr. Gautam Shroff, Dr. Lovekesh Vig, Dr. Shirish Karande</i><br><br>> Working on the broad research topics: NLP for Programming, Cross-domain Semantic Parsing, and Program Synthesis.   | <b>Pune, India</b>               |
| <b>Jun 2021</b><br><b>Apr 2021</b> | <b>Cognizer AI</b> <a href="#">🌐</a><br><i>Data Scientist (NLP) - Intern   Manager: Vineeth T M</i><br><br>> Developed APIs & data resources for Question-generation, Grammar-correction, and Text-simplification for the Cognizer Genius platform.  | <b>Bengaluru, India</b>          |
| <b>Jun 2021</b><br><b>Apr 2021</b> | <b>Max Planck Institute for Human Cognitive &amp; Brain Sciences</b> <a href="#">🌐</a><br><i>Summer Research Intern   Advisor: Dr. Lars Meyer</i><br><br>> Experimented with Combinatory Categorical Grammar - CCG parsers (left-branching-based incremental parsing) for modelling human-like language processing.  | <b>(Remote) Leipzig, Germany</b> |
| <b>Mar 2021</b><br><b>Aug 2020</b> | <b>IIIT Delhi   Multimodal Digital Media Analysis (MIDAS) Lab</b> <a href="#">🌐</a><br><i>Research Assistant (Bachelor Thesis)   Advisors: Prof. Rajiv Ratn Shah, Yaman Kumar Singla</i><br><br>> Worked on modelling information structure and coherence in spontaneous spoken discourse.<br>> Developed annotation pipelines & data resources for disfluency and content relevance & sufficiency for ESL speech data.  | <b>Delhi, India</b>              |
| <b>Dec 2019</b>                    | <i>Research Intern   Advisors: Prof. Rajiv Ratn Shah, Yaman Kumar Singla</i><br><br>> Contributed to the Berlitz SLTI automatic language proficiency - speech scoring system.  |                                  |
| <b>May 2021</b><br><b>Aug 2019</b> | <b>BITS Pilani (Goa Campus)   Cognitive Neuroscience Lab</b> <a href="#">🌐</a><br><i>Research Assistant   Advisor: Prof. Veeky Baths</i><br><br>> Developed a benchmark for syntactic evaluation of multilingual language models for Indic languages.<br>> Lead projects on Mental Lexicon Development and EEG-based brain imagery.<br>> Organized and volunteered for various events under the ERASMUS iBRAIN project.<br>> Designed and implemented an experiment for EEG data collection (6 subjects with 200 trials each) to inspect the role of low-level visual representations (BA-18 & BA-19) in spoken word processing. | <b>Goa, India</b>                |
| <b>May 2021</b><br><b>Dec 2019</b> | <b>Indian Institute of Technology, Bombay   Department of CS&amp;E</b> <a href="#">🌐</a><br><i>Summer Research Intern   Advisor: Prof. Ganesh Ramakrishnan</i><br><br>> Implemented a NLP pipeline for open-domain opinion-mining & aspect-based sentiment-analysis in natural language text.<br>> Built various text-based utilities for entity resolution, topic extraction, theme extraction, and lexicon-based sentiment polarity extraction.  | <b>Mumbai, India</b>             |

- [S.2] **Towards Using Diachronic Distributed Word Representations as Models of Lexical Development**   
Arijit Gupta\*, Rajaswa Patil\*, Veeky Baths  
*In Submission* OpenReview
- [S.1] **Towards Modelling Coherence in Spoken Discourse**   
Rajaswa Patil\*, Yaman Kumar Singla\*, Rajiv Ratn Shah, Mika Hama, Roger Zimmermann  
*Working Paper* arXiv
- [C.1] **DRIFT: A Toolkit for Diachronic Analysis of Scientific Literature**    
Abheesht Sharma\*, Gunjan Chhablani\*, Harshit Pandey\*, Rajaswa Patil  
*The 2021 Conference on Empirical Methods in Natural Language Processing (Virtual)* EMNLP '21
- [W.4] **Vyākaraṇa: A Colorless Green Benchmark for Syntactic Evaluation in Indic Languages**    
Rajaswa Patil, Jasleen Dhillon, Siddhant Mahurkar, Saumitra Kulkarni, Manav Malhotra, Veeky Baths  
*The First Workshop on Multilingual Representation Learning (Virtual)* MRL '21
- [W.3] **BPGC at SemEval-2020 Task 11: Propaganda Detection in News Articles with Multi-Granularity Knowledge Sharing and Linguistic Features Based Ensemble Learning**    
Rajaswa Patil, Somesh Singh, Swati Agarwal  
*The Fourteenth Workshop on Semantic Evaluation (Virtual)* SemEval '20
- [W.2] **CNRL at SemEval-2020 Task 5: Modelling Causal Reasoning in Language with Multi-Head Self-Attention Weights Based Counterfactual Detection**    
Rajaswa Patil, Veeky Baths  
*The Fourteenth Workshop on Semantic Evaluation (Virtual)* SemEval '20
- [W.1] **LRG at SemEval-2020 Task 7: Assessing the Ability of BERT and Derivative Models to Perform Short-Edits Based Humor Grading**    
Siddhant Mahurkar\*, Rajaswa Patil\*  
*The Fourteenth Workshop on Semantic Evaluation (Virtual)* SemEval '20
- [P.2] **Word2Brain2Image: Visual Reconstruction from Spoken Word Representations**    
Ajay Subramanian, Rajaswa Patil, Veeky Baths  
*The Sixth Annual Conference of the Association for Cognitive Science, 2019* ACCS '19
- [P.1] **Citta: A Lite Semantic Recommendation Framework for Digital Libraries**    
Rajaswa Patil, Siddhant Mahurkar  
*The NDLI-UNESCO International Symposium on Knowledge Engineering for Digital Library Design 2019* KEDL '19

## Select Research Projects

- Semantic Parsing: A Living Literature Review**   Sep'21 - Present
- › A website covering modelling and data resources for the Semantic Parsing tasks in NLP.
  - › Covers the Text-to-SQL semantic parsing task.
  - › Covers the Abstract Representation parsing task (Ex: UCCA, AMR, DRG, EDS, etc.).
  - › Covers the Shallow Semantic parsing tasks (Ex: semantic role labelling).
- Diachronic Analysis of Scientific Literature (DRIFT)**   Mar'21 - Present
- › DRIFT is a toolkit for DiachRonic analysis of scientIFic liTerature. [Demo @ EMNLP'21]
  - › DRIFT offers UI utilities for convenient training of Diachronic Embeddings for Scientific Corpora.
  - › DRIFT covers **nine** analysis methods: *word cloud*, *productivity & frequency plot*, *acceleration plot*, *semantic drift*, *tracking clusters*, *acceleration heatmap*, *similarity trends*, *keyword visualization*, and *LDA topic modeling*.
  - › **Presented at:** EMNLP'21, Aon Research.

## Academic Service

(\* = sub-reviewer)

|                          |   |
|--------------------------|---|
| <b>Program Committee</b> | ACL-SRW'22, MRL@EMNLP'21                    |
| <b>Reviewer</b>          | ACL-SRW'22, ICON'21, MRL@EMNLP'21, EAAI'21* |
| <b>Volunteer</b>         | ACL'21, Neuromatch'21                       |

## Talks

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### “Vyākaraṇa: A Colorless Green Benchmark for Syntactic Evaluation in Indic Languages”

- > [MRL EMNLP 2021 Presentation](#) [📺] November 2021 (Remote)
- > [Invited Talk - BITS Goa](#) September 2021 (Remote)
- > [ACL-IJCNLP SRW 2021 Presentation](#) [📺] August 2021 (Remote)

### “DRIFT: A Toolkit for Diachronic Analysis of Scientific Literature”

- > [EMNLP 2021 Presentation](#) [📺] November 2021 (Remote)
- > [Invited Talk - Aon Research](#) October 2021 (Remote)

### “Syntactic Processing and Language Comprehension”

- > [Round Table Discussion - CCCP Conference](#) [📺] December 2020 (Remote)

### “Getting Started with ML/NLP/Undergraduate Research”

- > [Getting Started with ML - ACM BITS Goa Chapter](#) [📺] July 2021 (Remote)
- > [Thesis Talks - CTE BITS Goa](#) [📺] May 2021 (Remote)
- > [Introduction to NLP Research - TIP BITS Goa](#) September 2020 (Goa, India)

## Teaching and Leadership Roles

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**Language Research Group (LRG) - BITS Goa** *Founder & Lead* [🌐] Aug'19 - Present

- > Established a student research group for NLP & Psycholinguistics
- > The group has currently published 11 papers & three projects

**Birla Institute of Technology and Science (BITS) Pilani, Goa Campus** *Teaching Assistant* Aug'20 - May'21

- > BITS F315: Introduction to Cognitive Neuroscience
- > BITS C382: Neuroscience and AI

**QSTP & CTE (student-run clubs at BITS Goa)** *Instructor* May'19 - Dec'19

- > Introduction to Machine Learning & Deep Learning
- > Deep Learning with PyTorch

## Software and Open Source Contributions

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- > **ML4Code**: Machine Learning for Big Code and Naturalness - [commits](#), [website](#)
- > **Semantic Parsing**: Modeling and Data resources for Semantic Parsing - [commits](#), [website](#)
- > **DecepticoNLP**: Python Library for Robustness Monitoring and Adversarial Debugging of NLP models - [commits](#)

## References

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- > Dr. Gautam Shroff ..... Senior Vice President, Chief Scientist, and Head - TCS Research [🌐]
- > Dr. Lovekesh Vig ..... Principal Scientist - TCS Research [🌐]
- > Dr. Shirish Karande ..... Senior Scientist - TCS Research [🌐]
- > Vineeth T M ..... Data Science Architect - Cognizer AI [🌐]
- > Dr. Lars Meyer ..... Research Group Leader - Max Planck Research Group Language Cycles [🌐]
- > Prof. Veeky Baths ..... Associate Professor - Dept. of Biological Sciences, BITS Goa [🌐]
- > Prof. Rajiv Ratn Shah ..... Assistant Professor - Dept. of Computer Science & Engineering, IIT Delhi [🌐]
- > Yaman Kumar ..... Research Scientist - Adobe Media Data Science Research [🌐]
- > Prof. Swati Agarwal ..... Assistant Professor - Dept. of Computer Science & Information Systems, BITS Goa [🌐]
- > Prof. Ganesh Ramakrishnan ..... Chair Professor - Dept. of Computer Science & Engineering, IIT Bombay [🌐]