

# Rajiv Teja Nagipogu

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## EDUCATION

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### Ph.D. Student

Computer Science

CGPA: 3.9/4.0

*Tentative Thesis: Molecular-scale learning using DNA computing*

Advisor: [Prof. John H. Reif](#)

Aug 2021 - Present

Duke

### Bachelor of Technology

Computer Science & Engineering

CGPA: 8.2/10

*Thesis: A Unikernel Web Server in Rust*

Advisor: [Prof. Chester Rebeiro](#)

Jul 2013 - May 2017

Indian Institute of Technology, Madras

## AWARDS

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- [GP-NANO fellowship](#) for the Fall '23 semester.

## PUBLICATIONS

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- [Improving the Kinetics of Strand Displacement Systems via Leak Cancellation](#) [ACCEPTED] to [FNANO 23](#)
- [WikiSeeAlso: Suggesting tangentially related concepts for Wikipedia Articles](#) [ACCEPTED] at The Fifth International Conference on Mining Intelligence and Knowledge Exploration [MIKE 2017](#)
- [MuRIL: Multilingual Representations for Indian Languages](#)

## SKILLS

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- **Programming Languages:** Python, C/C++, Java, Rust
- **Machine Learning Frameworks:** Pytorch, Tensorflow, scikit-learn
- **Data Science:** NumPy, Pandas

## WORK EXPERIENCE

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### Machine Learning Engineer @ Google Research

via *Optimum InfoSystem, Bangalore, India, Supervisor: Prof. Partha Talukdar*

May 2020 - July 2021

- Was a member of the Natural Language Understanding (NLU) team under Prof. Partha Talukdar.
- Worked on building deep learning models to enable temporal reasoning over events in natural language texts.

### Machine Learning Engineer @ Kenome.io

*Bangalore, India, Supervisor: Prof. Partha Talukdar*

Dec 2018 - April 2020

- [Kenome.io](#) is a core AI company helping enterprises derive insights from unstructured text data using cutting-edge Machine Learning, NLP, and Knowledge Graphs.
- Built and developed ML models on real-world text data for client-specific use-cases.
- The high-level tasks include Named Entity Recognition and KG-based Question Answering.

### Software Developer at PayPal

*Chennai, India*

Aug 2017 - Nov 2018

- Part of the team responsible for maintaining the Unix servers that run internal infrastructure applications.

## PROJECTS

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### A Unikernel Web Server in Rust [CODE] [DOCUMENTATION]

Jan 2017 - May 2017

Undergraduate Thesis, Guide: [Prof. Chester Rebeiro](#)

IIT Madras

- The aim was to implement a standalone web server completely in Rust and demonstrate the utility of such servers on the cloud in terms of memory safety and speed.
- Built a network stack from scratch on top of a minimal open-sourced [Rust kernel](#).
- Wrote a network driver for the [RTL8139](#) ethernet card to handle packet transmission and reception mechanisms.
- Implemented a driver for the [PIC8259](#) interrupt controller to bridge the hardware and system interrupts during packet exchange.
- The server in its current state can transmit and receive fixed-length UDP packets.
- Work got featured in Rust community's [newsletter](#)(6th entry).

### Link Augmentation for Wikipedia Articles [CODE] [REPORT]

Oct 2016 - Nov 2016

Natural Language Processing, Instructor: [Prof. Sutanu Chakraborti](#)

IIT Madras

- The aim was to suggest 'See also' section links that augment the connectivity of an under-developed Wikipedia article.
- Extracted the candidates from Wikipedia's category tree.
- Developed a web content based similarity measure and a link-based measure that ensure relevance and diversity among the suggestions.
- Combined these measures using classifier based weights and used the ensemble score to rank the candidates.
- Top ranked candidates are then suggested as 'See also' links.

### Chess Engine with AI [CODE]

Jul 2015 - Nov 2015

Personal Interest Project

IIT Madras

- Implemented a modified Minimax algorithm with alpha-beta pruning to build a dynamic depth game tree based on the pieces involved.
- Designed a scoring algorithm based on the game's state along with several positional heuristics.
- Reduced the complexity of computations greatly by implementing a data structure called BitBoard that represents each row of the board as a 64-bit integer i.e. 8-bits per cell.

### Algorithm Implementations for Competitive Programming [CODE]

Personal Interest Project

IIT Madras

- Active in the competitive programming arena since my sophomore year.
- Explored and implemented advanced data structures and algorithms outside the academic curriculum.

## SCHOLASTIC ACHIEVEMENTS

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- Received a scholarship from the Govt. of India that covered 70% of my college fee.
- Secured an All India rank of 1865 in IIT-JEE (Indian Institute of Technology - Joint Entrance Examination) among more than 5,00,000 candidates.
- Stood II in a state-wide talent search exam conducted by S.A.S.T (Society for Advancement in Science and Technology) during IX standard.

## EXTRA-CURRICULAR ACTIVITIES

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- Organized a departmental sports event, as a core member of the department club.
- Organized and taught a python workshop attended by over 100 undergraduate students for our university's annual Techfest, Shastra 2016.
- Also prepared the problem sets for a three-tier programming event, Triathlon, during this time.