Amish Mittal

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Education

- **Indian Institute of Technology (IIT) Patna** *July 2018 - May 2022 (Expected)*
  Bachelor of Technology in **Computer Science and Engineering** *CPI: 8.24*

Work Experience

- **Massachusetts Institute of Technology, MIT Media Lab** *Aug 2021 - Apr 2022 (Expected)*
  Research Affiliate | Advisor: Dr. Nataliya Kosmyna and Prof. Pattie Maes
  - Fluid Interfaces Group. Building the unsupervised machine learning components in Python and C to create Brain-Computer Interfaces (BCI) for realtime-feedback in assistive devices.
- **Sybill.ai, Inc** *Jun 2021 - Aug 2021*
  Software Development Engineering Intern
  - Worked on the core data capture infrastructure of a venture-backed, early-stage SaaS startup building an AI-powered video call partner which provides insights on participants' emotions. Also built the user authorization and asynchronous dataflow pipeline to communicate with Microsoft Graph API. Languages - **Python, C++**.
- **Expedia Group, Inc** *May 2021 - Jun 2021*
  Software Development Engineering Intern
- **Google Summer of Code (GSoC) 2019, Rocket.Chat** *May 2019 - Sep 2019*
  - Designed and developed Newsfeed - a social networking feature - for the Open Source application Rocket.Chat (31000+ GitHub stars) using **NodeJS, Meteor** and **MongoDB**. (**Project Report and Code Link)**

Publications

- **Multi-Modal Detection of Alzheimer's Disease from Speech and Text** [Link]
  Amish Mittal*, Sourav Sahoo*, Arnhav Datar*, Juned Kadiwala*, Hrithwik Shalu, Jimson Mathew **BIOKDD** (co-SIGKDD '21)
  In collaboration with JCBC, **University of Cambridge**, UK *equal contribution

Key Projects

- **Making Gradient Descent non-monotonic over gradient (Bachelor Thesis):**
  Advisor: Dr Jimson Mathew, IIT Patna. Changing gradient descent expression by making it non-monotonic on gradient opposite of other monotonic GD optimizers to control the convergence speed without any hyperparameter. **(Report)**
- **Decoding quantum states through nuclear magnetic resonance:**
  Machine Learning for Physics. Built a model to predict the coupling parameters associated with nuclei and electrons given their time-dependent magnetization from an NMR achieving an R^2 value of 0.992 and 0.997. **(Source Code)**
- **IndiaThanksYou:** Developed a crowd-sourced web application and database using **Django, PostgreSQL, Docker** to share stories about individual, corporate, NGO and diplomacy collaboration to help India fight the pandemic. **(Web)**
- **Assembler and Emulator for custom machine:** Developed a terminal assembler and emulator for a custom architecture consisting of 2 registers, program and stack counter, and select mnemonics using **C++**. **(Source Code)**

Technical Skills

- **Most experienced with:** C, C++, Python, Tensorflow, Keras
- **Some experience with:** Node.js, FastAPI, JavaScript, SQL, MongoDB, Docker, AWS, GCP, Unreal Engine.

Honors/Positions of Responsibility

- Selected to attend the Eastern European Machine Learning (**EEML**) Summer School 2021 organized by **DeepMind**.
- Invited to present my GSoC 2019 project at Rocket.Chat Open Source Alumni Summit.
- Recipient of the prestigious **KVPY** Fellowship by Dept. of Science and Technology, Govt. of India.
- **Coordinator - Machine/Deep Learning of NJACK**, leading the Computer Science Society of IIT Patna.