Harish Rajagopal

Fourth Year Undergraduate
Computer Science and Engineering · Indian Institute of Technology Kanpur
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Educational Qualifications

Degree	Year	Institution/Board	CGPA/%
B. Tech	2016 - Present	IIT Kanpur	9.7/10.0
Sr. Secondary	2016	Maharashtra HSC	90.46%
Secondary	2014	Maharashtra SSC	93.6%

Academic Achievements

- Awarded **Academic Achievement Awards** for outstanding performance in 1st and 2nd years.
- Secured All India Rank of **185** in **JEE Advanced 2016**.
- Secured All India Rank of **205** in **JEE Mains 2016**.

Internships

- **Research Intern, NYU Tandon**
  Prof. Paweł Korus, Prof. Nasir Memon May '19 - July '19
  - Researched robust image hashes that are immune to typical image transformations, while being sensitive to malicious image edits such as face swaps & deep fakes.
  - Developed a *framework* for testing against compression, contrast changes, gamma, blurring, warping.
  - Tested the networks against *adversarial attacks* such as *FGSM*, *Projected Gradient Descent*, *Boundary Attack*.

- **Research Intern (Remote), NYU Tandon**
  Prof. Yao Wang May '18 - July '18
  - Researched *differentiable plasticity* for *domain transfer* in images using Convolutional Neural Networks.
  - Improved *efficiency* in the temporal update rule for the *Hebbian weights* by using *transpose convolution*.
  - Achieved improvement in classification accuracy, when adapting models from the SVHN dataset to MNIST.

- **Intern, Machine Learning Team, New York Office of IIT Kanpur**
  Prof. Manindra Agrawal May '17 - July '18
  - Developed an *online* text clustering model using a fully-online modification of the *DBSCAN* algorithm.
  - Implemented an *online* document vectorisation model using *Distributed Memory paragraph vectors*.
  - Deployed above models using Docker and integrated with existing infrastructure using Apache Kafka.
  - Developed a *Word2Vec* model to identify duplicate documents using *Word Mover's Distance* on word vectors.
  - Trained a CNN with sliding windows for English OCR.

Projects

- **Compiler for Golang in Python**
  Prof. Amey Karkare Jan '19 - Apr '19
  - Implemented basic C-like features like data types, functions, pointers, structs, library imports, and I/O.
  - Implemented advanced features like composite literals, struct embeddings, typedefs/aliases, operator overloading, multiple value returns, and short declarations.

- **GemOS - Operating Systems Development**
  Prof. Debadatta Mishra Aug '18 - Nov '18
  - Developed an object-store FUSE filesystem.
  - Implemented process scheduling, sleeping, signal handling, syscalls and exception handlers.
  - Implemented virtual memory and paging.

- **No-Frills Cab Locator - Android App**
  Prof. Nisheeth Srivastava Sept '18 - Nov '18
  - A one-button-touch cab service with apps created using the *Ionic framework* for Android as part of a course.
  - Developed separate customer and driver apps using *Angular2* in Typescript and *Sass* for styling.

- **Improving GANs through Test-Time Constraints**
  Prof. Vinay Namboodiri, Prof. Chetan Arora Jan '19 - Present
- **Multi-Agent GANs for Image Super-Resolution**
  Prof. Vinay Namboodiri Aug '18 - Dec '18
- **Higher-Order Optimisation in Deep Learning**
  Prof. Piyush Rai Sept '18 - Nov '18
- **7th Inter-IIT Tech Meet (Silver Medal)**
  IIT Kanpur Contingent Dec '18
- **6th Inter-IIT Tech Meet**
  IIT Kanpur Contingent Dec '17 - Jan '18
- **Depression Therapy Chatbot**
  Programming Club, IIT Kanpur May '17 - July '17

Technical Skills

- **Programming Languages:** Python, Bash, C, C++, LaTeX, PHP, HTML+CSS, MySQL, Typescript
- **Software and Utilities:** TensorFlow, PyTorch, Keras, Numpy, Git, OpenCV, Hyperopt, Gensim, Ionic

Relevant Courses

Compiler Design (A⋆)	Algorithms II	Operating Systems
Visual Recognition	Introduction to Machine Learning	Data Structures and Algorithms
Probability and Statistics	Discrete Mathematics	Fundamentals of Computing (A⋆)