Adrish **Dey**

COMPUTER SCIENCE AND ENGINEERING · FINAL YEAR UG STUDENT

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Education

Netaji Subhash Engineering College   *Panchpota, Garia, Kolkata, West Bengal, India - 700152*

B.TECH (HONS) COMPUTER SCIENCE AND ENGINEERING   *Jul 2017 - Jul 2021 (Expected)*

Relevant Courses

Netaji Subhash Engineering College

COMPUTER SCIENCE AND MATHEMATICS

- **Completed**: Computer Programming, Linear Algebra, Multivariate Calculus, Discrete Mathematics, Object Oriented Programming, Data Structures, Computer Architecture
- **Ongoing**: Computer Graphics, Computer Networking, Operating System, Database Management

Online Courses

COURSERA, MIT OCW, STANFORD ONLINE COURSES ETC.

- Gilbert Strang's 18.06 class on Linear Algebra
- Machine Learning, Deep Learning, Introductory Statistics, Probabilistic Modelling
- Bayesian Methods for Machine Learning with Honors (**98.1%**) - `https://coursera.org/share/bb61cea5c5b87f3bb5d50cadcdd0fb38`

Languages & Frameworks

LANGUAGES

- Python - 20K+ Lines of Code, 4+ years of programming experience
- Bash, C++, C#.NET - 5K+ lines of Code, 5+ years of programming experience

FRAMEWORKS

- Git, TensorFlow, PyTorch, Pandas, OpenCV, Numpy, PyMC3, GPy, GpyOpt

Experience

Rephrase.ai   *Bangalore, Karnataka, India*

APPLIED RESEARCH INTERN   *December 2019 - February 2020*

- Implemented Hessian free Levenberg-Marquardt Optimizer, optimized for handling sparse Jacobians, required by the core feature extractor.
- Worked on lip expression translation between unpaired expression vectors, using adversarial training on cycle consistency.

TensorFlow, Google LLC   *Remote*

GOOGLE CODE-IN MENTOR   *November 2019 - January 2020*

- Mentored 200+ high school students helping them to start out with Open Source Contribution at TensorFlow. This includes finding good first issues and hosting them as tasks, Code Review, Doubt Clearing Session, documentation review, etc. All of these tasks were directed towards improving one / multiple libraries under TensorFlow ecosystem.

TensorFlow, Google LLC   *Remote*

GOOGLE SUMMER OF CODE STUDENT 2019   *May 2019 - August 2019*

- Worked closely with **TensorFlow Hub Team of Google AI** mentored by **Sachin Joglekar (Software Engineer, Google LLC)**, **Vojtech Bardiovsky (Senior Software Engineer, Google LLC)**, **Paige Bailey (Product Manager, TensorFlow, Google LLC)** and made **open source contributions** to TensorFlow and TensorFlow Hub.
- Added Support for displaying Auto Graphed tf.functions, to TensorFlow saved_model_cli
- Implemented **Enhanced Super Resolution GAN for Single Image Super Resolution** and **published the trained model on TensorFlow Hub**: `https://tfhub.dev/captain-pool/esrgan-tf2/1`
- Implemented Knowledge Distillation on Enhanced Super Resolution GAN and built a Proof of Concept Media Player capable of performing **near realtime video frame super resolution at 5 frames/second on CPU**: `https://github.com/captain-pool/GSOC/tree/master/E3_Streamer`
- Reference: `https://summerofcode.withgoogle.com/archive/2019/projects/5063116054855680/`

Covicas *Kolkata, India*

<small>COMPUTER VISION AND MACHINE LEARNING ENGINEER</small> *January 2019 - March 2019*

- Independently wrote a lightweight Face Recognition software for running on a distributed Raspberry Pi 3b+ needed for Perimeter Security Purpose.
- Independently worked on the **System Design** and wrote **Mosquitto based Network Modules** for distributed Raspberry Pi Nodes to communicat with each other.
- Wrote a HTTP based Interface for the client facing web application needed to acess the data of this system.

Projects

Ongoing

<small>PERSONAL PROJECT, RESEARCH PROJECT, COURSE PROJECT</small> *November 2019 - Present*

- Implementing Competitive Gradient Descent Paper `https://arxiv.org/abs/1905.12103` for training 2-player Generative Adversarial Model
- Working on Face Composite Matching which uses Bayesian Optimization to traverse the Latent Space of Variational Auto Encoded Images.
- Working on a Research Project on 3D Deep Learning under the supervision of **Dr. Shahrouz Ryan Alimo (Project Leader, Mission Control Sytems Deep Learning Group, NASA Jet Propulsion Lab)**[*]
  *NOTE: This project is neither recognized nor endorsed or has any connection with NASA.

PassGRUGAN: A GRU Based Generative Model for Hallucinating New Passwords *Python, TensorFlow, GANs*

<small>RESEARCH PROJECT</small> *February 2018 - March 2018*

- Independently researched on various Autoregressive Modelling Architecture like Hidden Markov Models, Likelihood based RNN model, Masked Autoencoder based Density Estimation, etc.
- Independently **Implemented a Generative Adversarial Network with GRU Units** for hallucinating New Passwords
- Researched on various objective functions for the GAN to stabilize training, and later settled for **Wasserstein Distance Metric**
- The Project got selected among **top 10 among an application pool of 300 applicants for presentation** at ACM B.Tech Project Awards 2018, organized by ACM Kolkata Chapter.

Shadow Fighters | HackInTheNorth 2019 *Unity3D, Javascript, TensorFlow*

<small>HACKATHON PROJECT</small> *March 2019 - March 2019*

- Lead a team of 4, and built a VR Unity Game which tracks human pose using Monocular Camera and transfer the motion to a Game Avatar, which fights with an Intelligent Bot trained using Unity ML Agents.
- Responsible for building the 3D Game Environment and KeyFrame Animations
- Responsible for training the Unity ML Agents Opponent with Proximal Policy Optimization Algorithm.
- Responsible for Integrating **Posenet** to a Javascript Frontend which connects to the Game.
- Built and Integrated the complete project **under 36 hours**

Invado | NASA SpaceApps Challenge 2018 *Android Development, TensorFlow*

<small>HACKATHON PROJECT</small> *September 2018*

- Lead a team of 4, and built an Android application which uses crowd sourced data to predict the probability of occurence of wild animals in a given location.
- Single handedly built a Flask Backend and connected to a MySQLDatabase for storing the crowdsourced data.
- Helped the Machine Learning Engineer in the team for building the ML API needed for the backend
- The Project stood $2^{nd}/150$ teams in the Regional Round.

6.042 Rules *PHP, Javascript*

<small>PERSONAL</small> *July 2017*

- Built a website for teaching **MIT's 6.042J: Mathematics for Computer Science**
- The Website got famous in no time. 200+ students registered from around the globe in less than 2 weeks
- Got appreciated by the original content creator **Prof. Frank Thompson Leighton** Dept. of Mathematics, Massachussetts Institute of Technology

Competitions

2020	**Qualification Round: 1789/10,500+ teams,** Google Hash Code 2020	*Remote*
2020	**Qualification Round: 2958/9,000+ teams,** Google Hash Code 2019	*Remote*
2018	**2nd/150 teams,** NASA SpaceApps Challenge Regionals	*Kolkata, India*