Avijit Roy

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2018 - Present	MS(CSE)	Indian Institute of Technology, Kanpur(IIT Kanpur)	8.40/10
2012 - 2016	B.Tech(Mechanical)	Dr. B.C. Roy Engineering College, Durgapur	8.09/10
2012	W.B.C.H.S.E(XII)	Kamalpur Netaji High School	70.20%
2010	W.B.S.E(X)	Ushagram Boys' High School	78.0%

Work Experience

- **Tata Consultancy Services, Bangalore** (Assistant Systems Engineer) *(1 year 10 months)*
  - Developed a dynamic and user-friendly web-application for managing and scheduling official events along with timezone compatibility
  - Worked in weekly, and bi-weekly agile sprints with team sized between four-six. Used Scrum Agile Methodology (Daily Scrum Meeting)
  - Undertook the responsibility of group representative for a team of thirty-two members during the initial training program of sixty days

Research Experience - MS Thesis

- **Optimizing the Patrolling Routes for Emergency Police Vehicles** *(10 months)*
  Advisor: **Dr. Nisheeth Srivastava**, *IIT Kanpur*
  My research is focused on developing a mathematical model using Reinforcement Learning paradigm for optimizing the Police patrol routes. I developed a model using Q-Learning algorithm which uses the location of past crimes to generate optimal patrolling points for Police movement. The aim is to cover maximum crime-prone area with minimum movement of the available vehicles. I have developed a web-application to monitor the movement of the vehicle from control-room. The application is build using ReactJs and Bootstrap at the frontend, NodeJs and Express at the backend and MongoDB at the database side. The entire application is currently under field testing

Key Projects

- **Object Detection and Ranking** *(2 months)*
  Mentor : **Dr. Vinay P. Namboodiri**, *Course :* **Visual Recognition**, *IIT Kanpur*
  - Developed a system using Deep Neural Networks to rank database images based on a given input image. I have used an ensemble of pretrained Resnet networks and used transfer learning to train and find the closest match. The model achieved a MAP score of 0.743
- **Event Management Application** *(1 year)*
  - Developed an event management tool for Qualcomm using AngularJS 1.4.8 and Spring Boot. I worked as a team member and implemented few key features like timezone support for the entire application, showing event details on calendar, carousel, routing etc.
- **Fake News Detection** *(1 month)*
  - Designed a NLP system to detect fake news in social networking sites. I have used LIAR_PLUS dataset to train a Long-Short Term Memory(LSTM) network and do classification of the news. The model achieved 26.07 percent accuracy on six way classification(true, mostlyTrue, halfTrue, false, barelyTrue, completelyFalse) whereas achieved 64.10 percent accuracy on two way classification(true,false)
- **Sudoku Generator and Solver:** *(2 months)*
  Mentor : **Dr. Pramod Subramanyan**, *Course :* **Verifiably Secure Systems**, *IIT Kanpur*
  - Developed a system to generate Sudoku puzzles. The system can also solve a given Sudoku puzzle or flag an error if the puzzle is unsolvable . The puzzles can be solved within one second using this system. It was implemented using Scala and a SMT solver(Z3)
- **AsyncRPC: An Asynchronous RPC Model for Interprocess Communication** *(2 months)*
  Mentor : **Dr. Ratan K. Ghosh**, *Course :* **Distributed Systems**, *IIT Kanpur*
  - Implemented a RPC system which supports asynchronous call to server from client. Main idea here is to allow the client to invoke next RPC call asynchronously without waiting for the reply from the server. We send back the data to the client using client-server socket

Technical Skills

- **Programming Languages:** Java(Proficient), ReactJS(Proficient), NodeJS(Proficient),Python(Prior Experience), C++(Prior Experience)
- **Software and Libraries :** PyTorch(Proficient), Numpy(Proficient), Latex(Proficient), VS Code(Proficient) Bootstrap(Prior Experience)
- **OS and Databases :** MS Windows (Proficient), Linux (Proficient), MongoDB (Prior Experience),   MySQL (Prior Experience)

Scholastic Achievements

- Secured **All India Rank 571** in **GATE 2018 Computer Science and Engineering** amongst 1.1 Lakh candidates with **99.47** percentile
- Secured a **Rank of 11005** in **West Bengal Joint Entrance Examinations 2012** amongst 1.2 Lakh candidates with **91.42** percentile

Relevant Courses (IITK)

- Introduction to Machine Learning, Visual Recognition, Verifiably Secure System, Mathematics for Computer Science, Distributed Systems

Online Courses

- Front-End Web Development with **React**, Server-side Development with **NodeJS, Express and MongoDB**, Front-End Web UI Frameworks and Tools: **Bootstrap 4**, **Reinforcement Learning** Explained, **Automated Reasoning:** satisfiability