

# Sahil Badyal

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## Education

### M.S., Computer Science

Arizona State University, Tempe, AZ, USA

May 2021

GPA - 4.0

**Interests:** Reinforcement Learning, Control, and Coordination in Robotics, NLP

**Classes:** Machine Learning, Control, and Coordination of Robotics, Advanced Algorithms, Machine Learning Systems

### B.Tech., Computer Science and Engineering

National Institute Of Technology Hamirpur, HP, India

May 2016

CGPA 8.24/10

**Interests:** Genetic Algorithms, Machine Learning, Software Design and Development

**Classes:** Artificial Intelligence, Robotics, Analysis and Design of Algorithms, Compiler Design, Computer Architecture

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## Research

- S. Bhattacharya, S. Badyal, T. Wheeler, S. Gil and D. Bertsekas, "Reinforcement Learning for POMDP: Partitioned Rollout and Policy Iteration With Application to Autonomous Sequential Repair Problems," in IEEE Robotics and Automation Letters, vol. 5, no. 3, pp. 3967-3974, July 2020, doi: 10.1109/LRA.2020.2978451.
- A. Kumar, K. Dutta, A. Gupta, S. Badyal and D. Rohan, "Assisting an architect with alternative automated space layout designs using order crossover genetic algorithm in AutoCAD," 2017 International Conference on Advances in Mechanical, Industrial, Automation, and Management Systems (AMIAMS), Allahabad, 2017, pp. 275-280.
- Dr. (Mrs.) Kamlesh Dutta, Dr. Varun Gupta, Sahil Badyal "Online Distance Education in India: A Dream or Reality?." ISTE Section Annual Convention, pp 112-121, 30th Sept- 1st Oct' 2015.
- Dr. (Mrs.) Kamlesh Dutta, Dr. Varun Gupta, Sahil Badyal, "Virtual Universities in India & Abroad: A Comparative Case Study." ISTE Section Annual Convention, pp 122-127, 30th Sept- 1st Oct' 2015.

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## Professional Experience

### Capital One, McLean, VA

Jun' 20 – Aug' 20

#### Data Science Intern, Vision and Language Technologies Team

- Developed a net promoter score (NPS) prediction model on the Capital One contact-center call transcripts.
- Designed the natural language processing (NLP) pipeline which can perform near real-time prediction of the NPS on transcripts.
- Used Sklearn, PyTorch for training, and Docker for publishing and deploying models.
- Worked on a range of techniques from simpler ones like Logistic Regression, Ranking Model with Isotonic Regression to state-of-the-art like Transformers (BERT etc.). for a comparative study.

### Roposo, Gurugram, India

Nov' 18 – Jul' 19

[Roposo](#) is a short video mobile platform (like TikTok), with a large user base of about 14M (at that time). As an ML expert, my task was to improve the video suggestions and also extract useful information from the videos uploaded.

#### Machine Learning Expert

- Developed Logo and NSFW detection system for the videos uploaded on the platform, using OpenCV and a deep CNN neural network architecture (Inception, VGG), with a test (deployment) accuracy of about 85%.
- Designed and developed an automated data pipeline using Spark and Distributed TensorFlow on AWS.
- Improved the like/view by 2% (as confirmed by A-B Testing) by migrating from the traditional ALS method to deep learning-based collaborative filtering model of the recommendation engine using Distributed TensorFlow.

### Ameyo, Gurugram, India

Jun' 16 – Jul' 18

[Ameyo](#) is a Java-based multi-threaded, omnichannel enterprise software for contact centers infrastructure (CCI) which has received an honorable mention in Gartner's Magic Quadrant in CCI domain for 3 consecutive years.

#### Machine Learning Engineer

- Developed an NLP pipeline, which consisted of sentiment/emotion analysis of the contact-center inbound emails using an implementation of LSTM on Tensorflow, with about 86% production accuracy.
- Assisted the Ameyo research team in developing a Speech to Text and keyword extraction system (based on Baidu's Deep Speech 2) for contact-center inbound calls.

- Developed a Multi-Layer Perceptron based BTTC (best time to contact) algorithm for outbound calling, using DL4J and Spark, which increased the outbound call connectivity by 2% at HDFC bank.

### Software Developer

- Analyzed requirements and designed, developed and implemented the modules of the product.
- Prepared test plans and test cases based on software requirement documents for Ameyo.
- Debugged and modified the software components of the product, using Kanban (JIRA).
- Received CEO award for 3 consecutive months for exceptional work in handling level 4 bug escalations.

## Technical Skills

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**Programming Languages:** Python, Java, C++, JavaScript, C, and Lisp

**Databases and Related technologies:** SQL, NoSQL (MongoDB), Spark, Hadoop

**Other Softwares/Libraries/Skills:** Tensorflow, Keras, Kafka, Docker, AWS, Agile, Git, A-B Testing, and Excel

## Leadership

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- HackonHills, Co-Founded the annual Hackathon at NIT Hamirpur (India) *Mar'16 - Present*
- Marketing and Application Development Team, Joint Secretary, NIT Hamirpur (India) *Dec'15 – May'16*
- Innovation Ecosystem, Co-Ordinator, NIT Hamirpur (India) *Apr'15 – May'16*
- GLUG (GNU Linux Users Group), Co-Ordinator, NIT Hamirpur *Jan'13 – May'16*

## Achievements

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- Received the Master's Opportunity for Research in Engineering (MORE) award for Spring 2020 *Dec' 19*
- Won a sponsor award (best use of Transposit API) in Sunhacks 2019 (3-day annual hackathon at ASU) *Sept' 19*