

# ASHWIN M DEVANGA

Software Engineer in Test - Data Analysis, Mathworks

MS in Data Analytics Engineering, Northeastern University, Boston MA

B.Tech in Biotechnology, IIT Guwahati, India.

Email-id : [ashwinmdevanga@gmail.com](mailto:ashwinmdevanga@gmail.com) | [devanga.a@northeastern.edu](mailto:devanga.a@northeastern.edu) | [ashwinmdevanga@alumni.iitg.ac.in](mailto:ashwinmdevanga@alumni.iitg.ac.in)

Mobile No.: +1 (857)-269-6777 / +91 97415 24775

Linkedin: <https://www.linkedin.com/in/ashwin-devanga>

Website : <https://www.ashwindevanga.com/>

Github: <https://github.com/ashwin-M-D>

## INTERESTS

- Reinforcement Learning, Machine Learning, Data Mining
- Mathematical Optimization Problems

## EDUCATION

Level of Education	Major / University	Institute	Year	Grades
Graduate Specialization: Graduation(M.S)	<i>Data Analytics Engineering</i> Northeastern University	Northeastern University, Boston	2022	3.79/4
UnderGraduate Specialization: UnderGraduation(B.Tech)	<i>Biotechnology</i> IIT Guwahati	IIT Guwahati, Guwahati	2020	6.01/10

## TECHNICAL SKILLS

- **Languages** (Python, R, MATLAB, JAVA, C, C#, Visual Basic)
- **Databases** (SQL, Neo4j, MongoDB)
- **Scripting** (Linux shell [bash, zsh], Windows[BATCH])
- **Tools** (GIT, Make, CMake, Tableau, Simio, AMPL, L<sup>A</sup>T<sub>E</sub>X, Arduino, Raspberry Pi)
- **Operating Systems** (Windows, Linux [Deb, rpm, arch])
- **Web Technologies** (HTML, PHP, CSS, TypeScript, Markdown)

## EXPERIENCE

- **Software Engineer in Test - MATLAB Math, Data Analysis and SciML tools** (Quality Engineering, The Mathworks)  
(Oct'22 - Current)
  - Work on Core Math and Data Analysis functions in MATLAB.
  - Build test strategies/procedures and implement them.
  - Some projects include automatic differentiation and Generative AI for MATLAB copilot - Data Analysis.
- **Teaching Assistant** (MIE-COE, Northeastern University)  
(Guide: Dr. Dehghanimohammadabadi Mohammad, MIE-COE, Northeastern University, Jan'21 - Aug'22)
  - Courses Taught: Reinforcement Learning, Metaheuristics and Applications, Simulation Analysis.
- **Research Assistant** (MIE-COE, Northeastern University)  
(Guide: Dr. Dehghanimohammadabadi Mohammad, MIE-COE, Northeastern University, Jan'21 - Current)
  - Reinforcement Learning and Metaheuristics for Operations Research Problems.
  - Worked on Operations Research problems such as the Vehicle Routing Problem and Job Scheduling.
  - Environment and Tools used: MATLAB, Python, C#, Simio.
- **Research Internship** (Chubu University, Japan)  
(Guide: Prof. K. Yamauchi, May 2018 – Jul 2018, May 2019 – Jul 2019)
  - Project based on Machine learning on a budget. Implementation of Supervised Reinforcement learning using Actor-Critic model for one-step learning.
  - Development of a modified Actor - Critic algorithm with dual actors to improve performance.
  - Environment Used: Python with PyTorch and JAVA.

## MAJOR PROJECTS

- **DM-Gym: A set of environments for developing reinforcement learning agents to solve Data Mining problems** (Research Project)  
(Guide: Dr. Dehghanimohammadabadi Mohammad, MIE-COE, Northeastern University, Aug'21 - Current)
  - Masters Thesis Project. Presented at Inform's Annual Meet 2021, Anaheim, Los Angeles, CA.
  - GitHub Link: <https://github.com/ashwin-M-D/DM-Gym>
  - PyPI Link: <https://pypi.org/project/dm-gym/>
- **Job Scheduling and Vehicle Routing Problem using Reinforcement Learning** (Research Project)  
(Guide: Dr. Dehghanimohammadabadi Mohammad, MIE-COE, Northeastern University, Jan'21 - May'22)
  - Use Reinforcement Learning to optimize Job scheduling and solve the Vehicle Routing Problem.
  - Compare RL methods with meta-heuristic methods to solve the same problem.
  - Used Tabular and DQN based RL approaches.
  - Used Genetic Algorithm and Particle Swarm Optimisation based metaheuristic approaches.
  - Environment and tools used: Python, C# and Simio.
- **Human computer collaborated learning through Reinforcement Learning.** (Research Project)  
(Guide: Prof. K. Yamauchi, May'18 - Dec'18)
  - The system forms a collaboration with the user and a reinforcement learning agent to speed up training creating a one-shot learning algorithm.
  - Research paper published in ICPRAM 2019.
- **Automated Toilet Cleaner** (Inter IIT Tech meet 2017-18, IIT Madras)  
(Technical Board, IIT Guwahati, Oct'17 - Jan'18)
  - Built a robot which can pick up trash on the floor, clean the floor and commode clear of stains without manual control.
  - Worked on construction and control of robotic arm. Used Kernelized Correlation Filters (KCF) tracking algorithm for tracking the object and Histogram of Oriented Gradients (HOG) with a Support Vector Machine (SVM) to identify the commode. Used Otsu Thresholding to detect stains on the floor.
  - In total a collection of 12 motors, 2 cameras, 6 sensors, an Arduino, a Raspberry Pi and a laptop were synchronizing and processing data in real time.

## PUBLICATIONS

- Belsare, S., Devanga, A., Dehghanimohammadabadi, M. (2024). **AI-Driven Multi-Objective UAV Route Optimization.** In *2024 Winter Simulation Conference (WSC)*. **Accepted**
- Devanga, A., Badilla, E.D. and Dehghanimohammadabadi, M. (2022). **Applied Reinforcement Learning for Decision Making in Industrial Simulation Environments.** In *2022 Winter Simulation Conference (WSC)* (pp. 2819-2829).  
DOI: 10.1109/WSC57314.2022.10015282.
- Devanga, A. and Yamauchi, K. (2019). **Collaborative Learning of Human and Computer: Supervised Actor-Critic based Collaboration Scheme.** In *Proceedings of the 8th International Conference on Pattern Recognition Applications and Methods - Volume 1: ICPRAM*, ISBN 978-989-758-351-3, pages 794-801.  
DOI: 10.5220/0007568407940801
- 若原 涼, Ashwin Devanga, and 山内康一郎 (2019). 人と機械学習の協調による未知問題の解の探索法. In *The Proceedings of the 29th Annual Conference of Japanese Neural Network Society*. JNNS2019P2-69

## CONFERENCES AND TALKS

- Winter Simulation Conference 2022 - Speaker : **Applied Reinforcement Learning for Decision Making in Industrial Simulation Environments.** Singapore.
- INFORMS Annual Meet 2021 - Session Chair and Speaker : **DM-Gym: A set of environments for developing reinforcement learning agents to solve Data Mining problems.** Anaheim, Los Angeles, CA, USA.
- ICPRAM 2019 - Poster Presentation : **Collaborative Learning of Human and Computer: Supervised Actor-Critic based Collaboration Scheme.** Prague, Czech Republic.