

Utkarsh Yashvardhan

✉ utkarshyashvardhan11@gmail.com • github.com/utkarshyashvardhan11
in [utkarshyashvardhan11](#) • [utkarshyashvardhan11](#)

Education

Georgia Institute of Technology <i>MS Computer Science, 3.87/4</i>	Atlanta, Georgia <i>Aug. 2024 – Present</i>
BITS Pilani <i>M.Sc. Mathematics & B.E. Computer Science (Dual Degree), 8.47/10</i>	Pilani, Rajasthan <i>Aug. 2019 – Jun. 2024</i>

Experience

Academic.....

Work Integrated Learning Programmes (WILP) <i>Teaching Assistant - Command Line Interface & Scripting</i> <i>Lead Teaching Assistant - Object Oriented Programming</i>	BITS Pilani <i>May 2024 – Jul. 2024</i> <i>Feb. 2024 – Apr. 2024</i>
Department of Computer Science & Information Systems <i>Teaching Assistant - Data Structures & Algorithms</i> <i>Teaching Assistant - Computer Programming</i>	BITS Pilani <i>Jan. 2024 – May 2024</i> <i>Aug. 2023 – Dec. 2023</i>
BITS IOT Lab <i>Research Assistant</i>	BITS Pilani <i>May. 2023 – Jul. 2023</i>

- Worked on applications of **Generative Artificial Intelligence (GAI)** in the security domain.

Open Source.....

JuliaTopOpt/SimpleTopOpt.jl <i>Collaborator</i>	Remote <i>Feb. 2024 – Jun. 2024</i>
---	---

- **Translated** complex **MATLAB**-based **topology optimization** models (3D, stress, and buckling) into **Julia** using established academic literature.
- **Benchmarked** the **computational efficiency** of the newly developed Julia implementations against their MATLAB counterparts.

Publications

2024: Generative AI for Cyber Security: Analyzing the Potential of ChatGPT, DALL-E and Other Models for Enhancing the Security Space | Siva Sai, [Utkarsh Yashvardhan](#), Vinay Chamola, and Biplob Sikdar, IEEE Access, 2024

Master thesis (BITS Pilani)

Title: *Bokeh Rendering using Federated Learning*
Supervisor: Dr Pratik Narang
Co-supervisors: Dr Jagat Sesh Challa, Dr Rakhi

- Engineered **privacy-preserving Federated Learning (FL)** architectures from centralized vision

models (**BRVIT** & **Stacked DMSHN**) using the **Flower** framework.

- Integrated a **ViT-Large backbone** into BRVIT, elevating the centralized baseline to a **peak PSNR of 24.89**.
- Achieved **24.42 PSNR** and **0.893 SSIM** in a **3-client decentralized simulation** on the **EBB! dataset**, matching baseline accuracy while **protecting user data**.

Projects

Georgia Institute of Technology

Atlanta, Georgia

Machine Learning Algorithms & Analysis

Fall 2025

Python, PyTorch, Scikit-learn, mlrose-hiive, OpenAI Gym

- Built scalable **Neural Networks** and **SVMs**, optimizing weights via **Simulated Annealing** and **Randomized Hill Climbing**.
- Benchmarked **K-Means** and **GMMs** using **ARI/NMI** scoring, extracting latent features via **PCA, ICA, and RP**.
- Solved Markov Decision Processes (MDPs) by evaluating Model-Based (**Value/Policy Iteration**) and Model-Free (**Q-Learning, SARSA**) algorithms.

Network Science and Graph Machine Learning

Summer 2025

Python, NetworkX, PyTorch Geometric, Scikit-learn, EoN

- Evaluated empirical **small-world** networks and benchmarked **community detection** algorithms (**Louvain, K-Clique**) using **NMI** scoring.
- Simulated **SIS epidemic outbreaks** on human contact networks via **EoN** to analyze transmission dynamics.
- Engineered **Graph Attention Networks (GATs)** and label propagation models for graph-based **NLP** tasks.

Bayesian Estimation of Differential Equations

Fall 2024

Julia, Turing.jl, OrdinaryDiffEq.jl, Bayesian Inference, MCMC

- Simulated non-linear **SEIR** compartmental disease models using **OrdinaryDiffEq.jl**.
- Executed **Bayesian parameter estimation** on noisy data utilizing **Turing.jl** and the **NUTS MCMC** algorithm.
- Validated estimations through **data retrodiction**, generating posterior ensembles to **quantify uncertainty**.

Technical Skills

Languages: C/C++, Python, Julia, MATLAB, Java, C#, SQL

ML & Scientific: PyTorch, Flower, NumPy, Scikit-learn, Qiskit, Pymc, Networkx, Pandas, Matplotlib

Developer Tools: Git, VS Code, Jupyter Notebook, IntelliJ IDEA, Unity, LaTeX

Scholarship

BITS Pilani

Pilani, Rajasthan

Merit Scholarship (II Semester 2019-2020)

Feb. 2021

Got Merit Scholarship of about Rs 70,000 which is given to **top 2% performers** in the batch.

Leadership

Microsoft Learn Student Ambassadors

BITS Pilani Chapter

Competitive Coding SIG Co-lead

Aug. 2021 – Apr. 2022