

# Tanvir Islam

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🌐 [Personal Website](#) in [LinkedIn](#) 🐙 [Github](#) 🎓 [Google Scholar](#)

## EDUCATION

**University of Connecticut**, Storrs, CT

*Bachelor of Science in Engineering*, May 2019

Double Major: Computer Science and Engineering, Electrical Engineering

GPA: 3.66 / 4.00

**Related Courses:** Algorithms, Data Structures, Systems Programming, C++ Essentials, Principles of Databases, Big Data, Operating Systems, Compilers, Computer Architectures, Probability, Theory of Computations, Digital Systems Design, Microprocessors

## PROFESSIONAL EXPERIENCE

**Google**

*Software Engineer*

Sunnyvale, CA

**July 2021 - Present**

### **GCP BigQuery**

- Working on a unified metastore for BigQuery to support open source engines such as Apache Spark, table formats such as Apache Iceberg, and file formats such as Parquet to enable multi-modal AI data lakehouse capabilities
- Developed and launched Hive partitioning compatible APIs for BigQuery to support the workloads for customers such as Walmart, Spotify, PayPal
- Optimized DDL query execution time to create Hive partitioned external tables on BigQuery by eliminating redundant work for auto-detecting the table schema

### **GCP Compute Engine**

- Enhanced a stateless distributed service responsible for driving VM versioning upgrades with optimized pruning and caching mechanisms, resulting in a 30% performance improvement in large cells having 500k VMs
- Delivered a cluster recommendation tool for optimally provisioning GPU VMs, used by Dynamic Workload Scheduler that was showcased at [Google Cloud Next '24](#)
- Designed and implemented database disaster recovery for distributed service in VM serving path to increase their fault tolerance and reliability
- Designed and led an intern project to streamline adding new VM configurations, resulting in a reduced NPI time and a full-time return offer for the intern upon graduation
- Mentored new software engineers within the team, equipping them with technical knowledge and business acumen to ensure their success at Google and beyond

**Amazon**

*Software Development Engineer*

New York, NY

**June 2021 - July 2021**

- Worked with the Amazon Ads Exchange team on streamlining the onboarding process of new ads source by creating a standard operation protocol (SOP) that decreased the time required to add and configure a new source

**FactSet Research Systems***Software Engineer*

Norwalk, CT

**July 2019 - April 2021**

- Created a new Content Management ETL pipeline using Python (NumPy, Pandas), improving the run-time of existing ingest/update jobs by more than 20%
- Optimized memory footprints of Python workflows handling 10-20 million database rows, reducing cloud storage costs by approximately 50%
- Developed a full-stack internal productivity tool with .NET, PostgreSQL, GraphQL, and Vue, enabling management of ~10k financial metadata records and providing a UI for easily adding and updating records

**University of Connecticut - Fine Arts Dean's Office***Technical Support Specialist*

Storrs, CT

**September 2017 - May 2019**

- Developed and maintained the front-end of the websites for UConn School of Fine Arts and Benton Museum with HTML, CSS (Bootstrap), JavaScript, jQuery, and WordPress
- Administered the server for museum's record database using EmbARK CMS, PowerShell
- Provided IT support to classrooms and exhibitions to ensure a reliable technical platform

**RESEARCH  
EXPERIENCE****National Science Foundation Research Experience (NSF REU)***Summer Researcher, University of Connecticut*

Storrs, CT

**May 2018 - August 2018**

Collaborated with [Dr. Shengli Zhou](#) and [Dr. Song Han](#) to research software-defined radio for real-time wireless communication systems. Utilizing the GNURadio framework, I implemented an ad-hoc network for inter-computer message transfer, beginning with a two-node prototype using O-QPSK (IEEE 802.15.4) protocol in the PHY layer. This prototype served as the foundation for a senior design project where I worked with the team to engineer a TDMA MAC layer solution to support multi-node networks. For implementing the solution, I created custom GNURadio blocks using C++ (Boost/SWIG). Further enhancing the system's security, I integrated AES Cipher Block Chaining (CBC) for message encryption to mitigate MitM attacks. We used Python scripts to send and read messages sent to sockets. Our final system achieved a 7% PLR in a three node network and received [received honorable mention position](#) in the ECE department senior design project showcase.

**Department of ECE at University of Connecticut***Undergraduate Research Assistant*

Storrs, CT

**September 2016 - August 2018**

Worked under the supervision of [Dr. John E. Ayers](#) to research buffer layers for metamorphic semiconductor devices, focusing on novel growth platforms for InGaAs/GaAs structures. While established theoretical models like Matthews, Mader, and Light (MML), and more refined approaches like Dodson & Tsao / Kujofsa & Ayers (DTKA) provided insights into substrate-level properties, a comprehensive simulation framework was needed to evaluate the performance of different superlattice structures as growth platforms. To address this, I developed a user-friendly MATLAB library that parameterized key inputs such as material composition and layer thickness to calculate dislocation profiles using various theoretical models. Collaborating with the research team, I explored the viability of diverse superlattice structures as buffer layers for defect filtering. From our work, we revealed that chirped superlattices are effective growth platforms with a 7%-46% Indium composition and that thickness-modulated chirped superlattices can outperform unchirped superlattices and linearly-graded layers for filtering dislocations. I authored four research papers and presented our work at the MIT IEEE Undergraduate Research and Technology Conference and the Connecticut Micro and Optoelectronics Conference.

TEACHING  
EXPERIENCE

**Sylvan Learning Center**  
*Tutor*

West Hartford, CT  
**May 2015 - November 2015**

- Conducted lecture sessions to prepare students for SAT Mathematics and constructed study packets for improved test scores
- Tutored high-school juniors and seniors in Algebra, Geometry, Trigonometry, Physics, and Chemistry and provided feedback on assignments

**Quantitative Learning Center at University of Connecticut** West Hartford, CT  
*Peer Tutor* **February 2015 - May 2015**

- Tutored students in Introduction to Programming with MATLAB, Calculus I/II, Physics for Engineers, and General Chemistry
- Lectured groups of students on programming concepts such as function, data structures, recursion, and good code-writing practices to improve comprehension and test scores

PUBLICATION

- **Islam M.**, Chen X., Khujofsa T., Ayers J.E., (2019). "Threading Dislocation Behavior in InGaAs/GaAs (001) Superlattice Buffer Layers". International Journal of High Speed Electronics and Systems, vol. 28, no. 03n04, p. 1940017.  
<https://doi.org/10.1142/S0129156419400172>.
- **Islam M.**, Khujofsa T., Ayers J.E., (2019). "A Modeling Study of Dislocation Behavior in InGaAs/GaAs (001) and InAlGaAs/GaAs (001) Heterostructures Utilizing Strained-Layer Superlattices". ECS Transactions, vol. 92, no. 6, p. 31.  
<https://doi.org/10.1149/09206.0031ecst>.
- **Islam M.**, Chen X., Khujofsa T., Ayers J.E., (2018). "Threading Dislocations in Metamorphic Semiconductor Buffer Layers Containing Chirped Superlattices". International Journal of High Speed Electronics and Systems, vol. 27, no. 03n04, p. 1840028.  
<https://doi.org/10.1142/S0129156418400281>
- **Islam M.**, Chen X., Khujofsa T., Ayers J.E., (2018). "Chirped Superlattices as Adjustable Strain Platform for Metamorphic Semiconductor Devices". International Journal of High Speed Electronics and Systems, vol. 27, no. 01n02, p. 1840009.  
<https://doi.org/10.1142/S0129156418400098>

RESEARCH  
POSTERS

- **Islam M.**, Chen X., Khujofsa T., Ayers J.E., "Threading Dislocations in Metamorphic Semiconductor Buffer Layers Containing Chirped Superlattices". Poster session presented at the Connecticut Micro and Optoelectronics Conference, New Haven, CT, USA, 2019.
- **Islam M.**, Chen X., Cai M., Khujofsa T., Ayers J.E., "Comparison of Chirped and Unchirped Superlattices as Dislocation Filters for Metamorphic InGaAs/GaAs (001) Devices". Poster session presented at the Materials Science and Technology Conference, Ohio, USA, Oct. 2018.
- Chen X., **Islam M.**, Khujofsa T., Ayers J.E., "Comparison of Chirped and Unchirped Superlattices as Buffer Layers for Metamorphic InGaAs/GaAs (001) Devices". Poster session presented at the MIT IEEE Undergraduate Research and Technology Conference, Cambridge, MA, USA, 2017.
- **Islam M.**, Chen X., Khujofsa T., Ayers J.E., "Chirped Superlattices as Adjustable Strain Platforms for Metamorphic Semiconductor Devices". Poster session presented at the Connecticut Micro and Optoelectronics Conference, Storrs, CT, USA, 2017.

TECHNICAL  
SKILLS

<b>Programming</b>	C/C++, Java, Python, JavaScript, R, MATLAB
<b>Data ETL &amp; Analytics</b>	BigQuery, Apache Spark, PostgreSQL, MongoDB, Apache Cassandra, Elasticsearch, Kafka
<b>ML &amp; Frameworks</b>	Tensorflow, PyTorch, XGBoost, Seaborn, Pandas, NumPy
<b>Web Development</b>	HTML, CSS, JavaScript, React.js, Vue.js, Node.js, Django, .NET Core
<b>Deployment Tools</b>	GCE, Kubernetes, AWS EC2, Terraform, Streamlit, HuggingFace

HONORS &  
AWARDS

- **Mentor** for the NASA Space Apps Challenge at Mountain View '23
- **IEEE HKN honors society member** for Electrical & Computer Engineers '16 - '19
- **Best undergrad research poster** award recipient at the CMOC conference '17, '19
- **Research poster presenter** at the MIT URTC '17
- **University of Connecticut Engineering Scholarship** recipient '16
- **Governor's Academic Incentive Award** recipient for academic excellence '15
- **Dean's List** for academic achievement Fall '14, Spring '15, Fall '15, Spring '18