










# Ovi Paul

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 <http://ovipaul.github.io/>


## Education

- 2015 – 2020     **Independent University Bangladesh** - B.Sc in Computer Science& Engineering.  
Major: Computer Science & Engineering  
Minor: Economics  
**Thesis title:** Land Use and Land Cover Semantic Segmentation on Bangladesh using Deep-Learning.
- 2012 – 2014     **St. Joseph Higher Secondary School** - HSC in Science

## Skills

Programming Language:	 Python, C++, Matlab, Java, PHP, R
Frameworks	 Pytorch, Electron, Bootstrap, Streamlit, Flask
Library	 OpenCV, GDAL, Numba, Scikit-Learn, Pillow
Databases	 MySQL, PostgreSQL
GIS Tools	 QGIS, eCognition, SNAP, ArcGIS, SAS Planet
Web Dev	 HTML, CSS, JavaScript, Apache Web Server
Other Tools	 L <sup>A</sup> T <sub>E</sub> X, Git, Anaconda, SCP, SSH, TMUX, Shell

## Employment History

- Jan 22 – . . . .     **AinoviQ** - Artificial Intelligence Engineer (Full-Time)
- Studying related literature on the working problem.
  - Designing and developing machine learning and deep learning systems.
  - Running machine learning tests and experiments.
  - Working on cutting-edge research in artificial intelligence and machine learning applications.
  - Contribute to engineering efforts from planning and organization to execution and delivery to solve complex, real-world engineering problems.

## Employment History (continued)

Feb 22 - . . . .

■ **Center for Computational & Data Sciences(CCDS)** - Research Assistant (Part-Time).

- Working with state-of-the-art Deep Learning models, analyzing the whole architecture and finding ways to optimize the system to obtain better results.
- Collecting satellite and aerial images and creating ground truth for it.
- Developing the pre-processing and post-processing procedure for the data set.
- Creating pipelines for the whole procedure and doing continuous integration and maintenance.
- Staying up-to-date with recent publications of the relevant field.
- Writing scientific papers and documentation.

Feb 20 - Dec 21

■ **Artificial Intelligence and Cybernetics Lab(AGenCy Lab)** - Research Assistant (Full-Time).

- Working with state-of-the-art Deep Learning models, analyzing the whole architecture and finding ways to optimize the system to obtain better results.
- Collecting satellite and aerial images and creating ground truth for it.
- Developing the pre-processing and post-processing procedure for the data set.
- Creating pipelines for the whole procedure and doing continuous integration and maintenance.
- Staying up-to-date with recent publications in the relevant field.
- Writing scientific papers and documentation.

## Teaching & Mentoring Experience

2021 - 2022

■ **Light of Hope** - Coding Instructor

- Teaching introductory programming lessons to Data Analysis, Game Development and Web Development
- Preparing and delivering lesson plans and instructional materials that facilitate active learning
- Instructing and monitoring students in the use of learning materials and equipment

2016 - 2019

■ **Independent University Bangladesh** - Teaching Assistant

- Courses Assigned were- CSC101 - Introduction to Programming, CSC204 - Data Structure, CSC317 - Numerical Method
- Taking lab classes and extra coding classes on C++ and Matlab
- Preparing questions and marking for quiz and assignments

## Research Experience

Feb 20 - Dec 21

### Remote sensing data to develop deep learning models for Land Use Land Cover classifications

Lab - AGenCy Lab

Supervisor - Dr. AKM Mahbubur Rahman (Independent University, Bangladesh)

-Automate the process of creating ground truth or label for both aerial and satellite imagery using DeepLabV3+, a deep learning model by Google Inc. which uses the Atrous convolution for semantic segmentation and ResNet-101 for the back-end. To automate the labeling process and to perform Land Use Land Cover analysis in the context of Bangladesh. The experiments showed accuracy of 0.82 to 0.96.][Feb. 2020 to Dec. 2021]

Aug 20 - Jul 21

### Satellite data to develop deep learning models for Building Categorization

Lab - H-U Tokyo Lab & DnDLab


Supervisor - Prof. Ryosuke Shibasaki (University of Tokyo)

Dr. Moinul Islam Zaber (University of Dhaka)





-Finding the efficacy of a novel urban categorization framework based on deep learning, and a novel categorization method customized for cities in the global south. Each urban space was divided into four socioeconomic categories: (1) highly informal area; (2) moderately informal area; (3) moderately formal area, and (4) highly formal area. The model can segment the test part of every cities with an average accuracy of 91.57.

## Research Publications

### Journal Articles

- 1 A. K. M. M. Rahman, M. Zaber, Q. Cheng, A. B. S. Nayem, A. Sarker, **O. Paul**, and R. Shibasaki, "Applying state-of-the-art deep-learning methods to classify urban cities of the developing world," *Sensors*, vol. 21, no. 22, 2021.  DOI: 10.3390/s21227469.

### Conference Proceedings

- 1 Q. Cheng, A. M. Rahman, A. Sarker, A. B. S. Nayem, **O. Paul**, A. A. Ali, M. A. Amin, R. Shibasaki, and M. Zaber, "Deep-learning coupled with novel classification method to classify the urban environment of the developing world," in *2nd International Conference on Signal Processing and Machine Learning (SIGML)*, Zurich, Switzerland, 2021.  DOI: 10.48550/arXiv.2008.10736.
- 2 F. F. Niloy, Arif, A. B. S. Nayem, A. Sarker, **O. Paul**, M. A. Amin, A. A. Ali, M. I. Zaber, and A. M. Rahman, "A novel disaster image data-set and characteristics analysis using attention model," in *25th International Conference on Pattern Recognition (ICPR)*, Milano, Italy, 2021, pp. 6116–6122.  DOI: 10.1109/ICPR48806.2021.9412504.
- 3 A. B. S. Nayem, A. Sarker, **O. Paul**, A. Ali, M. Ashraful Amin, and M. R. AKM, "LULC Segmentation of RGB Satellite Image Using FCN-8," in *3rd SLAAI-International Conference on Artificial Intelligence (ICAI)*, Belihuloya, Sri Lanka, 2019.  DOI: 10.48550/arXiv.2008.10736.
- 4 **O. Paul**, "Image pre-processing on numtadb for bengali handwritten digit recognition," in *2018 International Conference on Bangla Speech and Language Processing (ICBSLP)*, Sylhet, Bangladesh, 2018, pp. 1–6.  DOI: 10.1109/ICBSLP.2018.8554910.

## Presentation

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### Conference Presentation


Sep 18      **International Conference on Bangla Speech and Language Processing(ICBSLP)**  
Image Pre-processing on NumtaDB for Bengali Handwritten Digit Recognition

### ICT Presentation

Dec 19      **ICT Innovation Fund - Bangladesh**  
LULC Semantic Segmentation on Bangladesh Using Deep Learning

## Open-Source Projects

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Dec 19      **Zenith**  
A high level Python library made with PYPI. It's a tool for data manipulation and processing in Python ecosystem.

 **Enigma Simulator**  
An encryption device used in the World War II made using Python and Streamlit.

## Miscellaneous Experience




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### Awards and Achievements

2018 - IEEE      **Winner-** Intra IUB Programming Contest  
2018 - ACM      **Regional Qualifiers** - ICPC Asia Dhaka Regional Contest  
2018 - IUB      **2nd Runner Up** - Makers' Mania 2018(QuadCopter)  
2018 - ACM      **Regional Qualifiers** - ICPC Bangladesh IUBAT NCPC  
2017 - IEEE      **Winner** - IEEE Day Programming Contest 2017




## Professional Affiliations/Services

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2021 - . . . .      **ReScience C**  
- Reviewer  
2022      **26th International Conference on Pattern Recognition (ICPR 2022, Montréal, Canada)**  
- Technical Committee(Reviewer)  
2018 - 2019      **Institute of Electrical and Electronics Engineers(IEEE)**  
- Former Student Member

## Relevant Academic Courses

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-  Artificial Intelligence
-  Image Processing
-  Linear Algebra

## Relevant Academic Courses (continued)

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- 📖 Software Engineering

## Extracurricular Activities

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- 📖 Volunteered for 5th International Conference on Advances in Electrical Engineering (ICAEE).
- 📖 Organized programming contest as part of the IEEE club.
- 📖 Organising competitive programming classes as part of the IUB ACM Student Chapter.
- 📖 Writing blogs related to computer science.

## References

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Available on Request