Md **Shopon**

Deep Learning Engineer · Researcher

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Research Interest: *Deep Learning, Computer Vision, Generative Adversarial Networks, Biometric Technology, Natural Language Processing*

Education

University of Calgary
Alberta, Canada

M.Sc. in Computer Science - Thesis Based *Sep. 2020 - **

- Currently working on Biometric technologies using Deep Learning.

University of Asia Pacific
Dhaka, Bangladesh

B.Sc. in Computer Science and Engineering *May. 2014 - Mar. 2018*

- **Thesis Title:** End to End Optical Character Recognition Using Deep Learning. - Link
- As the outcome of the thesis, two conference paper was published.

Experience

Biometric Technologies Lab, University of Calgary
Alberta, Canada

Research Assistant *Sep. 2020 - **

- Working as a Research Assistant at Biometric Technologies Lab.
- **Supervisor:** Prof. Dr. Marina Gavrilova.
- **Research Work:** Graph Neural Networks, Gait Recognition, Multi-modal biometrics de-identification.

Department of Computer Science and Engineering, University of Asia Pacific
Dhaka, Bangladesh

Lecturer *Sep. 2018 - Aug. 2020*

- **Courses Conducted:**
  - 1) Introduction to Computer Science and Programming Methodologies, 2) Structured Programming, 3) Data Structures, 4) Pattern Recognition
- Associated with Career Development Club and Programming Contest Club

Department of Computer Science and Engineering, University of Asia Pacific
Dhaka, Bangladesh

Teaching Assistant *Apr. 2018 - Aug. 2018*

- **Courses Assisted:**
  - 1) Introduction to Computer Science and Programming Methodologies, 2) Structured Programming, 3) Algorithms, 4) Object Oriented Programming II

Gaze Inc.
Dhaka, Bangladesh

Deep Learning Engineer *May. 2017 - Mar. 2018*

- Built computer vision and natural language processing based software applications.
- Vehicle Number Plate Detection and Recognition using End to End Approach

Machine Learning Lab, University of Liberal Arts Bangladesh
Dhaka, Bangladesh

Research Assistant *Feb. 2017 - Jan. 2018*

- Developed an Android application for ICT Ministry of Bangladesh to increase the aesthetic beauty of handwriting.
- Collected one of the largest Bangla handwritten character dataset which can be used for multiple purpose. The dataset was named "BanglaLekha-Isolated".
- Proposed a deep learning based baseline solution for BanglaLekha-Isolated.

Volunteering

Schulich Ignite
Alberta, Canada

Mentor *Sep. 2020 - **

- **Purpose:** Free computer coding courses led by University of Calgary student mentors
- **Responsibility:** Mentoring programming enthusiast students about programming and debugging.

Computer Science Graduate Society, University of Calgary
Alberta, Canada

Vice President - Social *Sep. 2020 - **

- **Purpose**: To promote student activity in UofC computer science graduate community
- **Responsibility**: Organize different social events and activities.

Prospective Bangladeshi Students in Canadian Universities (PBSCU)
Dhaka, Bangladesh

Mentor *Aug. 2020 - **

- A non profit organization aiming to change the attitudes towards higher studies in Canada for prospective students
- As a mentor, my responsibility is to mentor prospective students about their journey towards studying in canda. From SOP writing to visa applications I help prospective students.

Career Development Club, CSE-UAP *Dhaka, Bangladesh*

Convener *Sep. 2018 - Aug. 2020*

- Organized Several Workshops, seminars and job fair
- One to one career counseling
- Connecting existing students with alumni

Programming Contest Club, CSE-UAP *Dhaka, Bangladesh*

Co Convener *Sep. 2018 - Aug. 2020*

- Organized two intra department programming contest
- Organized training camps for undegraduate students
- Guiding problem solvers to debug problems

Programming Contest Club, CSE-UAP *Dhaka, Bangladesh*

President *Jan. 2017 - Mar. 2018*

- Handled day-to-day activities for the club
- Setting practice contests and team formation contests

Paper and Publications

Book Chapter

1. **Md Shopon,** ASM Hossain Bari, Yajurv Bhatia, Pavan Karkekoppa Narayanaswamy, Sanjida Nasreen Tumpa, Brandon Sieu, and Marina Gavrilova, "Biometric System De-Identification: Concepts, Applications, and Open Problems", Handbook of Artificial Intelligence in Healthcare, Springer Nature, 2021

Journals

1. Biswas, M., Islam, R., Shom, G. K., **Shopon, M.**, Mohammed, N., Momen, S., & Abedin, A. (2017). Banglalekha-isolated: a multi-purpose comprehensive dataset of handwritten bangla isolated characters. Data in brief, 12, 103–107.
2. **Shopon, M.**, Bari, A. H., & Gavrilova, M. L. (2021). Residual connection-based graph convolutional neural networks for gait recognition. The Visual Computer, 1-12.
3. **Shopon, M.**, Tumpa, S. N., Bhatia, Y., Kumar, K. N., & Gavrilova, M. L. (2021). Biometric Systems De-Identification: Current Advancements and Future Directions. Journal of Cybersecurity and Privacy, 1(3), 470-495.

Conference Papers

1. **Shopon, M.**, Mohammed, N., & Abedin, M. A. (2016). Bangla handwritten digit recognition using autoencoder and deep convolutional neural network. In Computational intelligence (iwci), international workshop on (pp. 64–68). IEEE.
2. **Shopon, M.**, Mohammed, N., & Abedin, M. A. (2017). Image augmentation by blocky artifact in deep convolutional neural network for handwritten digit recognition. In Imaging, vision & pattern recognition (icivpr), 2017 ieee international conference on (pp. 1–6). IEEE.
3. **Shopon, M.**, Adnan, M. A., & Mridha, M. F. (2016). Krill herd based clustering algorithm for wireless sensor networks. In Computational intelligence (iwci), international workshop on (pp. 96–100). IEEE.
4. Mahmud, A., Adnan, M. A., & **Shopon, M.** (2018, April). An incremental clustered gradient method for wireless sensor networks. In 2018 21st Saudi Computer Society National Computer Conference (NCC) (pp. 1-6). IEEE.
5. Ahmed, S., Islam, M., Hassan, J., Ahmed, M. U., Ferdosi, B. J., Saha, S., & **Shopon, M.** (2019). Hand Sign to Bangla Speech: A Deep Learning in Vision based system for Recognizing Hand Sign Digits and Generating Bangla Speech. 2019 International Conference on Sustainable Computing in Science, Technology & Management (SUSCOM-2019).
6. **Shopon, M.**, Diptu, N. A., & Mohammed, N. (2020). End-to-End Optical Character Recognition Using Sythetic Dataset Generator for Noisy Conditions. In Proceedings of International Joint Conference on Computational Intelligence (pp. 515-527). Springer, Singapore.
7. Nishat, Z. K., & **Shopon, M.** (2020). Unsupervised Pretraining and Transfer Learning-Based Bangla Sign Language Recognition. In Proceedings of International Joint Conference on Computational Intelligence (pp. 529-540). Springer, Singapore.
8. Nishat, Z. K., & **Shopon, M.** (2019, September). Synthetic Class Specific Bangla Handwritten Character Generation Using Conditional Generative Adversarial Networks. In 2019 International Conference on Bangla Speech and Language Processing (ICBSLP) (pp. 1-5). IEEE.
9. **Shopon, M.** (2020). Bidirectional LSTM with Attention Mechanism for Automatic Bangla News Categorization in Terms of News Captions. In Electronic Systems and Intelligent Computing (pp. 763-773). Springer, Singapore.

10. Karim, M. A., Razin, M. J. I., Ahmed, N. U., **Shopon, M.**, & Alam, T. (2021). An Automatic Violence Detection Technique Using 3D Convolutional Neural Network. In Sustainable Communication Networks and Application (pp. 17-28). Springer, Singapore.
11. Hossain Sani, S., **Shopon**, M., Hossain Khan, M., Hasan, M., & Mridha, M. F. (2020, November). Short-term and Long-term Air Quality Forecasting Technique Using Stacked LSTM. In 2020 the 6th International Conference on Communication and Information Processing (pp. 165-171).
12. Sani, S. H., **Shopon, M.**, & Rakib, S. H. (2021). Air Quality Index Prediction Using Azure IoT & Machine Learning for Smart Cities. In Proceedings of International Conference on Computational Intelligence, Data Science and Cloud Computing (pp. 721-733). Springer, Singapore.
13. Shahin.M, Ahmed.T, Rahman.S, **Shopon.M**, Shahin, M. M. H., Ahmmed, T., Piyal, S. H., & **Shopon, M.** (2020, June). Classification of Bangla News Articles Using Bidirectional Long Short Term Memory. In 2020 IEEE Region 10 Symposium (TENSYMP) (pp. 1547-1551). IEEE.
14. **Shopon, M.**, Yanushkevich, S., Wang, Y., & Gavrilova, M. Graph Convolutional Neural Network for Reliable Gait-based Human Recognition, IEEE International Conference on Autonomous Systems (IEEE ICAS 2021).
15. Lin, Y. H., Tang, C. H., Chen, Z. T., Hsu, G. S. J., **Shopon, M.**, Gavrilova, M. (2021, September). Age-Style and Alignment Augmentation for Facial Age Estimation. In International Conference on Computer Analysis of Images and Patterns (pp. 297-307). Springer, Cham.

Skills

Machine Learning Expertise	Tensorflow, Keras, PyTorch, Sci-kit Learn
Programming Language	Python, C, C++, Java, Matlab
Programming Problem Solving	Participated in 24 Onsite Contests and solved more than 500 problems in several online judges
Algorithm Expertise	Dynamic Programming, Graph Theory, Number Theory
Hardware	Raspberry Pi, Arduino
Version Controlling	Git
Languages	Bengali, English, Hindi

Honors & Awards

2015	**Vice Chancellor's Award - Spring 2015**, Unviersity of Asia Pacific	*Dhaka, Bangladesh*
2015	**Vice Chancellor's Award - Fall 2015**, Unviersity of Asia Pacific	*Dhaka, Bangladesh*
2015	**Champion**, UAP Inter Department Programming Contest - 2015	*Dhaka, Bangladesh*
2015	**Vice Chancellor's Award - Spring 2017**, Unviersity of Asia Pacific	*Dhaka, Bangladesh*
2015	**Vice Chancellor's Award - Fall 2017**, Unviersity of Asia Pacific	*Dhaka, Bangladesh*
2016	**Champion - Programming Contest Section**, UAP Hardware & Software Exposition - 2016	*Dhaka, Bangladesh*
2016	**Runner Up - Hardware Project Exhibition** , UAP Hardware & Software Exposition - 2016	*Dhaka, Bangladesh*
2021	**Runner Up - Guess the Age Competition 2021**, 19th International Conference on Computer Analysis of Images and Patterns CAIP 2021	*University of Salerno, Italy*

Program Committees

2019	**Problem Writer and Judge**, UAP Inter Department Programming Contest - 2019	*Dhaka, Bangladesh*
2019	**Organizer & Head of Technical Committee**, 3rd UAP CSE, Software and Hardware Carnival	*Dhaka, Bangladesh*
2019	**Judge**, Hackathon Section, 3rd UAP CSE, Software and Hardware Carnival	*Dhaka, Bangladesh*
2018	**Problem Writer and Judge**, UAP Inter Department Programming Contest, 2018	*Dhaka, Bangladesh*
2017	**Lead - Technical Team**, International Conference on Computer and Information Technology (ICCIT), 2017	*Dhaka, Bangladesh*
2017	**Lead - Technical Team**, ACM International Collegiate Programming Contest, Dhaka Regional, 2017	*Dhaka, Bangladesh*

References

1. **Marina L. Gavrilova, Ph.D**
   - Professor and Associate Head, Department of Computer Science, University of Calgary
   - Email: mgavrilo@ucalgary.ca
2. **Nabeel Mohammed, Ph.D**
   - Assistant Professor, Department of Electrical and Computer Engineering, North South University
   - Email: nabeel.mohammed@northsouth.edu