

Asif Ahmed Neloy

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Updated: *January 2, 2022*

RESEARCH INTEREST

My multidisciplinary research area encompasses a broad domain of **Supervised** and **Unsupervised Machine Learning**. I am particularly interested in problems related to **Probabilistic** and **Bayesian Modeling**, **Anomaly Detection**, **Dimension Reduction**, and interdisciplinary applications of **Auto-Encoders**. Currently, I am working on the topic of Auto-Encoder and different algorithms related to **Variational and Gaussian modeling**. Part of my research focuses on Statistical interpretation and Visualization of Unsupervised Machine Learning algorithms.

EDUCATION

- **University of Manitoba** Winnipeg, Manitoba, Canada
Master Of Science - Computer Science; *January 2021 - December 2022*
Research Area: Dimension Reduction and Anomaly Detection using Unsupervised Machine Learning
- **North South University** Dhaka, Bangladesh
Bachelor of Science - Computer Science and Engineering; *January 2015 - March 2019*
Thesis Topic: Content-based Health Recommender System for ICU Patient

SKILLS SUMMARY

- **Languages:** Python, R, C++, C, SQL, Bash, JAVA.
- **Frameworks:** Scikit, PyTorch, TensorFlow, Keras.
- **Tools:** Tableau, Anaconda, Power BI, GIT, Latex, MySQL, SQLite.
- **Platforms:** Linux, Web, Windows, Arduino, Raspberry, IBM Cloud.
- **Soft Skills:** Leadership, Management, Public Speaking, Time Management and can write well organized and structured scientific reports, meeting minutes

PYTHON PACKAGES

- **Data Scaler Selector:** Data Scaler is an open-source python library to select the appropriate data scaler for your Machine Learning model.

EXPERIENCE

- **Dept of Statistics** University of Manitoba
TA/Demonstrator (Part-Time, Contractual) *September 2021–January 2022*
 - **Course:** DATA 2010:Tools & Techniques for Data Science
 - **Primary Assignment:** Attend lectures and other sessions of instruction in the course. Consults with students by maintaining regularly scheduled and posted times for such consultation and provides a reasonable amount of informally scheduled consultation if necessary
 - **Additional Duties:** Occasional approved substitution for other members of the teaching or teaching support staff including the necessary related tasks
- **NSERC The Visual and Automated Disease Analytics (VADA) Program** University of Manitoba
Graduate Trainee *August 2021–Present*
 - **Course:** Attend CHSC7400-Foundations of Disease Analytics Course
 - **Skill Development:** Advance student technical skills in the development and integration of interactive data visualization, visual analytics, and automated approaches for data mining, mathematical and statistical modeling, and predictive analytics.
 - **Impact:** Improve student knowledge about applied problems relevant to the detection, prevention and management of infectious and chronic diseases, from varied large, electronic data sources

- **Dimension Reduction Lab** University of Manitoba
Research Assistant *January 2021–Present*
 - **Supervised by:** *Dr. Maxime Turgeon*
 - **Skill Development:** Supporting the application of new methods in Data Science (e.g. machine learning, Anomaly Detection). Write and execute computer programs as required, using Python or R.
 - **Impact:** Research and develop novel Dimension Reduction algorithms and techniques.

- **Dept of Computer Science** University of Manitoba
Grader/Marker 1 (Part-Time, Contractual) *January 2021–Present*
 - **Course:** COMP 1600: Navigating the Digital World & COMP 1500: Computing: Ideas and Innovation
 - **Primary Assignment:** Grades and marks work submitted by students from tests, exams or projects. Provides written feedback to the students, on the quality of material presented for grading or marking.
 - **Additional Duties:** Meets with the employment supervisor responsible for the course(s), for purpose of orientation and receiving guidelines for grading and marking assignments and for providing written feedback to the students.

- **MIS Dept** **Advanced Chemical Industries (ACI Ltd.)**
Information Analyst *January 2020–January 2021*
 - **Research Area:** Using AI Tech to solve daily retail complications
 - **Primary Assignment:** Interpret and translate data into valuable information using different machine learning models for effective analysis purposes.
 - **Business requirements:** Analyze client’s requirements to provide suggestions in order to deliver products that are aligned with the ultimate business requirement.

- **Dept of Electrical and Computer Engineering (ECE)** North South University
Research Assistant *January 2020 –January 2021*
 - **Supervised by:** *Dr. Shahnewaz Siddique*
 - **Research Area:** Incorporating Computer Vision with robotics systems.
 - **Additional Duties:** Facilitate the reviewing process for the research plans and publications.

- **Dept of Electrical and Computer Engineering (ECE)** North South University
Lab Instructor (Part-Time) *May 2019–January 2021*
 - **Primary Assignment:** Responsible for conducting the lab classes of the enrolled students. Also responsible for grading and marking the students in their lab classes.
 - **Additional Duties:** Lab Coursework includes implementing algorithms and theoretical concepts with respective programming languages as deemed necessary by the course curriculum.

- **Dept of Electrical and Computer Engineering (ECE)** North South University
Graduate Teaching Assistant *January 2019–January 2021*
 - **Primary Assignment:** Facilitate a discussion section or tutorial; hold weekly office hours; grade homework, programming assignments, exams, or projects; keep records; distribute and copy reading materials; prepare answer keys or supplementary notes, and act as the course web-master.
 - **Additional Duties:** Assisting faculty with record keeping, such as tracking attendance and calculating grades.

TEACHING EXPERIENCE

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|--|---|
| • Dept of Electrical and Computer Engineering (ECE) | North South University |
| <i>Lab Instructor</i> | <i>January 2019–January 2021</i> |
| Course | Semester |
| CSE231L Digital Logic design | Summer 2019 |
| CSE332L Computer Organization and Architecture | Summer 2019 |
| CSE482L Internet and Web Technology | Summer 2019 |
| CSE115L Programming Language I | Summer 2019 |
| CSE331L Microprocessor Interfacing & Embedded System | Spring 2019, Fall 2019, Spring 2020, Summer 2020, Fall 2020 |
| CSE311L Database Management System | Spring 2020, Summer 2020, Fall 2020 |

REVIEWING EXPERIENCE

- CAAI Transactions on Intelligence Technology (2020)
- IEEE ACCESS (2020)

BOOK PUBLISHED

- “Let’s make Robots”, Publisher - Pinnacle Media, Publishing Year – November 2017. ISBN: 978-984-34-3061-8.

PUBLICATIONS

- **Work-in-Progress:**
 - Neloy, A. A., Turgeon M. (November, 2021) **A Comprehensive Study of Auto-Encoders for Anomaly Detection: Efficiency and Trade-Offs**
- **Refereed Journal:**
 - Neloy, A. A., Alam, S., Bindu, R. A.,(2020, August). **Design and Implementation of a Novel Hybrid Rental Apartment Recommender System**. *Advances in Data Science and Adaptive Analysis*. DOI: <https://doi.org/10.1142/S2424922X2041003X>
 - Neloy, A. A., Bindu, R. A., Alam, S., Haque, R., Khan, M. S. A., Mishu, N. M., & Siddique, S. (2020, November). **Alpha-N-V2: Shortest Path Finder Automated Delivery Robot with Real-Time Object Detection and Avoiding System**. *Vietnam Journal of Computer Science (VJCS)*, Issue-7, No 4, Nov 2020. DOI: <https://doi.org/10.1142/S2196888820500219>
 - Neloy, A. A., Arman, A., Islam, M. S., & Motahar, T. (2018). **Automated Mobile Robot with RFID Scanner and Self Obstacle Avoiding System**. *International Journal of Pure and Applied Mathematics*, 118(18), 3139-3150. (pdf)
- **Peer-Reviewed Conference Paper:**
 - Bindu, R.A., Neloy, A.A., Alam, S. and Siddique, S., 2021, July. **3-Survivor: A Rough Terrain Negotiable Search and Surveillance Mobile Robot with Real-Time Object Detection**. In 2021 18th International Conference on Ubiquitous Robots (UR) (pp. 423-428). IEEE. DOI: 10.1109/UR52253.2021.9494682.
 - Bindu, R. A., Neloy, A. A., Alam, S., Moni, N. J., & Siddique, S. (2019, November). **Sigma-3: Integration and Analysis of a 6 DOF Robotic Arm Configuration in a Rescue Robot**. In 2019 4th International Conference on Robotics and Automation Engineering (ICRAE), (pp. 6-11). IEEE. DOI: <https://doi.org/10.1109/ICRAE48301.2019.9043799>
 - Neloy, A. A., Alam, S., Bindu, R. A., & Moni, N. J. (2019, April). **Machine Learning based Health Prediction System using IBM Cloud as PaaS**. In 2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI), (pp. 444-450). IEEE. DOI: <https://doi.org/10.1109/ICOEI.2019.8862754>
 - Bindu, R. A., Alam, S., & Neloy, A. A. (2019, March). **A Cost-Efficient Multipurpose Service Robot using Raspberry Pi and 6 DOF Robotic Arm**. In Proceedings of the 2019 2nd International Conference on Service Robotics Technologies, (pp. 16-22). DOI: <https://doi.org/10.1145/3325693.3325701>
 - Neloy, A. A., Haque, H. S., & UI Islam, M. M. (2019, February). **Ensemble Learning Based Rental Apartment Price Prediction Model by Categorical Features Factoring**. In Proceedings of the 2019 11th International Conference on Machine Learning and Computing, (pp. 350-356). DOI: <https://doi.org/10.1145/3318299.3318377>
- **Book Chapters:**
 - Neloy, A. A., Bindu, R. A., Alam, S., Haque, R., Khan, M. S. A., Mishu, N. M., & Siddique, S. (2020, March). **Alpha-N: Shortest Path Finder Automated Delivery Robot with Obstacle Detection and Avoiding System**. In Asian Conference on Intelligent Information and Database Systems, (pp. 202-213). Springer, Cham. DOI: https://doi.org/10.1007/978-3-030-41964-6_18
 - Neloy A.A., Shafayat Oshman M., Islam M.M., Hossain M.J., & Zahir Z.B. (2019). **Content-Based Health Recommender System for ICU Patient**. In: Chamchong R., Wong K. (eds) *Multi-disciplinary Trends in Artificial Intelligence*. MIWAI 2019. Lecture Notes in Computer Science, vol 11909. Springer, Cham. DOI: https://doi.org/10.1007/978-3-030-33709-4_20

- **Preprint:**

- Bindu, R. A., Neloy, A. A., Alam, S., & Siddique, S. (2020). **3-Survivor: A Rough Terrain Negotiable Teleoperated Mobile Rescue Robot with Passive Control Mechanism**. arXiv preprint arXiv:2003.05224.
- Neloy, A. A., Oshman, M. S., Islam, M. M., Hossain, M. J., & Zahir, Z. B. (2019). **Early Health Prediction System for ICU Patient using Machine Learning and Cloud Computing**. (No. 1590). EasyChair.

HONORS AND AWARDS

- The Visual and Automated Disease Analytics (VADA) **Graduate Trainee Stipend** \$19000 for the 2021-2022 Fiscal year.
- **Fellowship for Education Purposes** \$500 for Summer 2021, Dept of Computer Science, University of Manitoba.
- **Fellowship for Education Purposes**, \$11500 for Winter, Summer and Fall 2021, Faculty of Science, University of Manitoba.
- **General Bursary**, \$2400 amount deduction towards Winter 2021 tuition fees, Faculty of Graduate Study, University of Manitoba.
- **25% Financial Aid** towards tuition fees for Academic Performance, North South University
- Achieved the 1st **Runner Up** prize for the Undergraduate Thesis Capstone Project, Capstone Innovation Challenge, Season 6, 2018.
- Runner up - IEEE day Hackathon 2017.
- **Junior Govt Board Scholarship** (Standard 8) for excellent academic result.

VOLUNTEER EXPERIENCE

- **Peer Mentor**, for the term of Fall 2021, University of Manitoba.
- Conducted Tutorial session and workshops including: **Workshop on Robotics (Robo101)**, **Workshop on Intro to Machine Learning**, and **Hour of Code** for the undergraduate students of North South University.
- Served as **Founding Secretary (2017)** and **Vice-Chair (2018)** of the **NSU ACM Student Chapter**. For my contribution towards NSU ACM SC, I received the prestigious **Service of Recognition** award from ACM NY.

REFERENCES

Professional and Academic Reference available upon request.