NOWRIN AKTER SUROVI

nowrin0102@gmail.com
Mobile: +65-91403291
Personal Website: https://nowrin0102.github.io/nowrinsurovi

EDUCATION

PhD in Defect Detection in Metal Additive Manufacturing — Singapore University of Technology and Design (SUTD)
CGPA : 4.3 out of 5.00 — *September 2018-August,2023*

- **Thesis**: Geometric defects identification during the metal additive manufacturing process.

M.Sc. in Electrical and Electronic Engineering — University of Dhaka, Bangladesh
CGPA: 3.74 out of 4.00 — *2015-2016*

- **Thesis**: Development of an algorithm for analyzing different skin diseases using an image processing method.

B.Sc. in Applied Physics, Electronics and Communication Engineering — University of Dhaka, Bangladesh
CGPA: 3.76 out of 4.00 (5^{th} among 80 students). — *2010-2014*

- **Project**: Comparison of the theoretical and experimental efficiency of silicon solar cell.

WORK EXPERIENCE

Intern — A*STAR, Singapore
Singapore Institute of Manufacturing Technology (SIMTech) — *May 2019- August 2019*

- Built a lightweight semantic segmentation model using ADE20K dataset and FCN+Mobilenetv2 and FCN+ShuffleNetv2 networks.
- Performed literature review on semantic segmentation model with a fisheye camera to navigate a system for mobile robots

Research Assistant — Dhaka, Bangladesh
Bangladesh Council of Scientific and Industrial Research — *March 2016- March 2018*

- Developed algorithms for analyzing different skin diseases based on image features collected from the American Academy of Dermatology.
- Separated diseased skin from normal skin using image segmentation and adaptive histogram methods.
- Performed literature review and initial experiments on designing temperature controller, micro-controller based automatic voltage stabilizer and a monitoring system for Electrical and Electronics equipment using the Internet Of Things (IoT).

TEACHING EXPERIENCE

Graduate Teaching Assistant (GTA)
Singapore University of Technology and Design (SUTD) — *September 2021 - April 2022*

- **Tutored Courses-**
  - **Machine Element Design (30.105)**: Engineering Product Development (EPD) - Fall, 2021
  - **Structure and Materials (30.001)**: Engineering Product Development (EPD) - spring, 2022.
- **Duty as a GTA-**
  - : Helped professors with lecture preparation, including class lectures and laboratory lectures.
  - : Supervised students in lecture and laboratory classes, between classes and after classes.
  - : Tracked attendance, graded home works and assignments, calculated grades, and kept records.
  - : Gave extra help to students who were struggling with homework, assignments and concepts.
  - : Collaborating with the professors to identify students' issues and recommend solutions
  - : Distributed and copied reading materials; prepared answer keys or supplementary notes

RESEARCH PUBLICATIONS

- **Journals**

1. **Nowrin Akter Surovi**, Gim Song Soh. Acoustic Feature Based Geometric Defect Identification in Wire Arc Additive Manufacturing, *Virtual and Physical Prototyping*, 2023.
2. **Nowrin Akter Surovi**, Gim Song Soh. Process Map Generation of Geometrically Uniform Beads Using Support Vector Machine, *Materials Today: Proceedings, Elsevier, 2022*.
3. Abu Kowsar, Abdullah Yousuf Imam, Mashudur Rahaman, Muhammad Shahriar Bashar, Md. Saidul Islam, Sumona Islam, **Nowrin Akter Surovi** and Zahid Hasan Mahmood. Comparative study on the efficiencies of silicon solar cell, *International Organization of Scientific Research (IOSR) Journal of Applied Physics (IOSR - JAP),2014*.

- **Conference Proceedings**

1. **Nowrin Akter Surovi**, Gim Song Soh. A Heuristic Approach To Classify Geometrically Defective Bead Segments Based on Range of sound power, Range of curvature and Maximum height, *Proceedings of the ASME 2023 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, 2023 (Accepted).
2. **Nowrin Akter Surovi**, Gim Song Soh. Multi-bead and Multilayer Printing Geometric Defect Identification Using Single Bead Trained Models, *International Solid Freeform Fabrication Symposium*, 2023 (Accepted).
3. **Nowrin Akter Surovi**, Shaista Hussain, Gim Song Soh. A Study of Machine Learning Framework For Enabling Early Defect Detection In Wire Arc Additive Manufacturing Processes, *Proceedings of the ASME 2022 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, 2022*
4. **Nowrin Akter Surovi**, Audelia G. Dharmawan, Gim Song Soh. A Study on the Acoustic Signal Based Frameworks for the Real-Time Identification of Geometrically Defective Wire Arc Bead, *Proceedings of the ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, 2021.*

TALKS

- **DManD Research Seminar, 2022 :** Hybrid Wire-Arc Additive Manufacturing.
- **SUTD Lunch and Talk, 2021 :** Real time identification of Defective beads.

Projects

- **Website Development:** Build a Django poll application where users can create and vote on questions. Github link: https://github.com/nowrin0102/web_dev
- **Ph.D. Thesis**

1. Collect and process the Acoustic signals during the metal 3D printing process.
2. Collect and analyze the 3D point cloud from the printed object for using experimental purpose.
3. Develop a novel dataset labeling algorithm to classify good and defective signals.
4. Construct different machine learning (ML) models with different acoustic features to identify Geometric defects for the metal additive manufacturing process.
5. Build process parameter maps based on the probability for different materials so that good quality printing process parameters can be achieved.

- **M.Sc Thesis**

1. Collected different diseased skin images such as eczema, scabies, pyoderma, ringworm, psoriasis, MRSA etc.
2. Extracted different features from the digital skin images such as mean, contrast, uniformity, reverse smoothness, entropy etc. and based on the values of features differentiate the category of skin diseases.
3. Developed an algorithm for analyzing and diagnosing skin diseases to a good degree of accuracy that may help dermatologists in making his or her decisions.

- **B.Sc Project**

1. Developed a modified version of spectral p-n junction model and simulated theoretical efficiencies of silicon solar cell.
2. Compared experimental and theoretical efficiency of silicon solar cell and gave a conclusion that short circuit current density influence the results of efficiency.

RESEARCH INTERESTS

- **Machine and Deep Learning**
- **Signal and Image Processing**
- **Additive Manufacturing**
- **Computer Vision**

AWARDS & ACHIEVEMENTS

- **SUTD PhD Fellowship**
- **Teaching Assistant Training Certificate** issued by The Learning Sciences Lab.
- **National Science and Technology (NST) Scholarship by the Ministry of Science and Technology, Bangladesh, 2016** for conducting Ms.c thesis work.
- **Dhaka University Merit Scholarship, Bangladesh, 2014.** for outstanding results in Undergrad.
- **Dhaka University Alumni Association Scholarship, Bangladesh, 2011.** for securing the second position in the first year of Undergrad.

SKILLS

- **Languages**: Python, Java, C, Matlab, Assembly.
- Familiar with HTML, JAVA, JavaScript.
- **Libraries**: Scikit-Learn, Numpy, Scipy, Pandas, OpenCV
- **Software:** SOLIDWORKS, AutoCAD, Packet Tracer
- Excellent presentation skill and proficiency in technical writing (Latex).
- Ability to work independently as well as in a team.
- Ability to communicate effectively and methodically to produce deliverables