# Adil Bin Bhutto

Research Student, IPLab, NAIST, Japan
https://iplab.naist.jp/members/

Laboratory for Cyber Resilience
Information Science Division, Nara Institute of Science and Technology
Building A, Division of Information Science, 3rd floor
8916-5 Takayama, Ikoma, Nara 630-0192, Japan
Email: adil-b@ieee.org
Webpage : http://abbhutto.com
Github : https://github.com/binbhutto
+81-80-4475-9101 (Japan) | +91-96-133-54620 (India)


## Education

**Nara Institute of Science and Technology**, Ikoma, Nara 630-0192, **Japan**
*Master's Degree*, Cyber Resilience Lab, Division of Information Science, *Oct '22 - Present*

**Tezpur Central University**, Napaam, Tezpur - 784028, Assam, **India**
*Bachelor of Technology*, Computer Science and Engineering, *Jul '17 - Aug '21*

## Research Interests

System Software, Networking, Machine Learning
Anomaly Detection, Distributed Systems

## Publications

**Adil Bin Bhutto**, Ryota Kawashima, Yuzo Taenaka, and Youki Kadobayashi. "Meeting Latency and Jitter Demands of Beyond 5G Networking Era: Are CNFs Up to the Challenge?" In: IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC 2024), pp. 1604-1611.doi:10.1109/COMPSAC61105.2024.00251.

Pratyush Kr. Deka, Yash Verma, **Adil Bin Bhutto**, Erik Elmroth, and Monowar Bhuyan. "Semi-supervised Range-based Anomaly Detection for Cloud Systems." In: IEEE Transactions on Network and Service Management(2022), pp. 1–1.doi:10.1109/TNSM.2022.3225753.

**Adil Bin Bhutto**, Xuan Son Vu, Erik Elmroth, Wee Peng Tay, and Monowar Bhuyan. "Reinforced Transformer Learning for VSI-DDoS Detection in Edge Clouds." In: IEEE Access 10 (2022), pp. 94677–94690.

## Awards & Achievements

Received a full scholarship of **3.5 Million** Yens (JPY) from the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan, for a span of two years to do my master's and conduct research.

Elected as **E-Leader** of Entrepreneurship Cell at Tezpur University, an initiative by Ministry of Skill Development & Entrepreneurship, Govt. of India

## Experience

**Staff Engineer**
*Ovvy, California,* ***United States*** *Aug '22 - Present*
Leading the ML team for real estate image editing. We have been developing fundamental AI models and applying theoretical knowledge and state-of-the-art advancements in computer vision to make image editing automated. My responsibility is to conduct research and train custom AI models for superior performance and oversee the deployment of these models to serve millions of requests.

**Research Assistant**
*ICSCoE, IPA, Ministry of Economy, Trade and Industry,* ***Japan*** *Sep'23 - Present*
Working to improve core network technology for better performance by using generic hardware processor architecture for software-defined networking. Also, exploring AI and machine learning to enhance networking solutions and strengthen cybersecurity defense at ICSCoE.

**Visiting Researcher**
*Autonomous Distributed Systems Lab, UmeåUniversity,* ***Sweden*** *Jan '21 - Sept '22*
**One plus** years of experience in developing fundamental methods for anomaly detection using machine learning and data science. Worked on multiple research papers with international collaborations. It was funded by **WASP** project under **Knut and Alice Wallenberg Foundation**.

**Summer Research Intern**
*HydroSence Research Lab, Dept. of Civil Engineering, IIT Delhi, India* *Apr '20 - Jul '20*
Used Sentinel-1 SAR satellite data to measure Indian river width on Google Earth Engine Platform and designed a web dashboard using LeafletJS, AWS, and Django to visualize crowd-sourced landscape data.

**Winter Research Intern**
*Center for Cognitive Computing Lab, IIIT Allahabad, India* *Dec '19 - Jan '19*
Worked on UI design and did a web-based implementation, which involved the deployment of machine learning models using Flask API, handling physical servers, VPN tunneling over proxy, and back-end and front-end coding.

## Research Projects

**Development of resilient network function**
*Supervisor : Yozu Taenaka* *Nov '22 - June' 23*

• This study aims to improve the Quality of Experience(QoE) of video flows by preferentially allocating bandwidth to video flows in environments where video communication is essential. • Investigating the use of reinforcement learning for developing a custom network transport protocol that can provide the expected QoE.

**Using Attention Based Multi-head Transformer Model in Reinforced Settings to Better Detect VSI-DDoS Attacks on Edge Cloud**
*Supervisor: Monowar Bhuyan* *Jan '21 - July '21*

• Extensive experiments with testbed and benchmark datasets make the proposed approach effective in terms of detection rate and availability of services, outperforming baseline approaches with 0.9% to 3.2% on average

## General Projects

**Detection of VSI-DDoS Attack using Attention Models in Mobile Edge Clouds**
*Supervisor: Prof. Nityananda Sarma* *Jan '21 - Jun '21*

• Investigated the feasibility of attention-based neural models to utilize compact representation and detect the presence of VSI-DDoS attacks effectively • Several experiments have been done to finalize a modified transformer (attention-based neural network) which shows comparable results with existing LSTM and BiLSTM models.

## References

**Dr. Youki Kadobayashi**
*Professor at Cyber Resillience Lab*
*Information Science Division, NAIST*
*8916-5 Takayama, Nara 630-0192, Japan* *jouki-k@is.naist.jp*

**Dr. Erik Elmroth**
*Professor at Department of Computing Science*
*Naturvetarhuset, Umeå Universitet*
*NAT.B1.201, 901 87 Umeå, Sweden* *elmroth@cs.umu.se*

**Dr. Nityananda Sarma**
*Professor at Department of Computer Science & Engg.*
*Tezpur University, Assam 784 028, India* *nitya@tezu.ernet.in*

**Dr. Monowar Bhuyan**
*Assistant professor at Department of Computing Science*
*Naturvetarhuset, Umeå Universitet*
*NAT.B2.208, 901 87 Umeå, Sweden* *monowar@cs.umu.se*

**Tyler Good**
*Founder of Ovvy AI: Real Estate Photography*
*California, United States* *tyler@ovvy.ai*

## Computer Skills

**Languages**: C, C++, Python, JavaScript, NodeJS, Bash, SQL, LaTeX, Assembly (x86, MIPS)
**Common Tools & Software Packages**: DPDK, Flask, HTML/CSS, React, Vim, Tmux
**Research Tools**: TensorFlow, Keras API, Scikit-Learn, Numpy, Pandas, Matplotlib
**Hyperscalers**: Google Cloud Platform (GCP), Amazon Web Services (AWS)

## Extra Interests

**Club**: Daemon (Friends in industry and academia working in tech with shared interest.)
**Hobbies**: Reading, Cooking, and Playing Badminton

(Updated: Aug '24)