



Scan Me!



## HENDRIK TAMPUBOLON

### Ph.D. Candidate

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*I am comfortable with working related to Machine Learning, Deep Learning on Computer Vision applications, Predictive Modeling, Data Analysis, Data Science, Database Design, Web Apps Development, Edge-Fog-Cloud Computing, and IoT Apps Development. However, I am also open to facing new role challenges in the job offered.*

## Education background

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|--------------|--|
| 2018-Present | Doctoral Degree in Computer Science and Information Engineering<br><i>National Taiwan University of Science and Technology, Taiwan</i><br>Advisor: Prof. Kai-Lung Hua, Ph.D.   Co-Advisor: Prof. Chao-Lung Yang, Ph.D. (Will be graduated in July 2023)              |
| 2014-2017    | MS in Computer Science and Information Engineering<br><i>National Chung Cheng University, Taiwan</i><br><u><i>Thesis: Supervised Deep Learning for Traffic Flow Prediction</i></u><br>Advisor: Prof. Pao-Ann Hsiung, Ph.D.   |
| 2007-2012    | BS in Information Technology<br><i>University of Sumatera Utara (USU), Indonesia</i><br><i>Thesis: Learning Management System Development on Facebook Apps</i><br>Academic Advisor: Prof.Dr. Opim Salim Sitompul, M.Sc. Thesis Advisor: M Anggia Muchtar, S.T., MMIT |

## Portfolio

### Skeleton-Based HAR/HIR EFCC

*Develop Secure and Privacy-Preserving Human Interaction Recognition with Edge-Fog-Cloud Computing*

- *Front-End: TypeScript and NodeJS for UI design which user can be interact with the systems*
- *Back-End: PyTorch for Skeleton Based Action Recognition and TensorFlowJS for Human Pose Estimation*
- *Security: Lightweight Symmetric Encryption and MFA were applied*

- Jetson Nano deploy at the Edge for Data acquisition of human action video streaming
- PoseNet deploy at the Fog Layer to extract Human Skeleton Sequence Data
- STGCN-PAM deploy at the Cloud Layer (AWS) to recognize the HAR/HIR based on the skeleton data receipt from the Edge

Code: [skeleton-ar-efcc](#)

### **Handbell Project**

Data Analysis and Visualization from Industrial Sensors, Streaming, Anomaly Detection. I use Angular for UI design and Plotly JavaScript Lib for Streaming Data Visualization. Ngix and Flask and Python were deployed in container on AWS Cloud.

Code: The code is private due to confidential issue of the Handbell Company

### **SimLab Color**

Develop Image Processing to imitate what artists (Human Labor) did to edit the images before it is printing.

Code: [SimsLab-Color](#) (It contains Full-Stack development, however some confidential data were not published due to the company NDA)

### **SimsLab HMI**

Human-Robot coordination and system integration

- working on the SOP situation video of assembly line, using the openpose and mediapipe
- Use therbling label to do the training
- identify the action and therbling of human bodies in the video.

Code: [HMI](#)

### **Jakarta Smart City (JSC) Project**

This project is a cooperation between JSC and NTUST which contains very Big Raw Data from Jakarta City. I develop CapsuleNet Model for Network-Wide-Road Traffic prediction at once.

Code: Upon Request

## **Skill Sets**

### *Programming*

Python	90%
PHP	80%
C++	75%
R	80%

### *Scripting*

JavaScript	90%
CSS	95%
HTML5	95%
TypeScript	80%

## **Software & Tools**

### Databases

- MySQL
- PostgreSQL
- MongoDB
- SQL Server
- Oracle
- SQLite

### Front-End

- AngularJS
- React
- Bootstrap

### Cloud

- AWS
- GCP
- AlibabaCloud

### Web

- Django
- NodeJS

### ML & AI

- PyTorch
- Jupyter Lab

- *Drupal*
- *Apache*
- *TensorFlow*
- *Onnx*
- *Ngix*
- *phpMyAdmin*
- *Keras*
- *Colab*

#### Container

- *Docker*
- *Kubernetes*

#### IDE

- *VsCode*
- *Notepad++*
- *Rstudio*

## Languages

Indonesian	100%
Batakness	100%
English	90%
Chinese	30%

## Working Experiences

09/2018-Present	Graduate Student Research Assistant, SimsLab (IM) and Multimedia Vis. Comp. Lab (CSIE), Taiwan Tech, Taipei, Taiwan
08/2017-08/2022	Lecturer <i>Department of Information Systems, Krida Wacana Christian University, Jakarta, Indonesia</i>
06/2017-10/2017	Technology Advisor <i>Satuplatform, Jakarta, Indonesia</i>
09/2014-12/2016	Student Research Assistant, ESL Lab, National Chung Cheng University (CCU), Chiayi, Taiwan
04/2013-02/2014	Project Administrator (H3I/Huawei Project <i>Acquisied by Indosat Indonesia</i> ) <i>PT.Masindo Utama Nusantara (North Sumatera Region), Medan, Indonesia</i>
12/2010-10/2011	Web Developer – Freelance

## Journal articles (Peer reviewed)

1. **Tampubolon, H.**, Yang, C.-L., Chan, A.S., Sutrisno, H., and Hua K.-L., (2019), Optimized CapsNet for traffic-jammed speed prediction using mobile sensor data under urban swarming transportation, *Sensors*, 19(23), 5277. [DOI](#)  
SCI, IF 2018: 3.301, Rank 23/84 in Chemistry, Analytical, 15/61 in Instruments and Instrumentation, 12/26 in Electrochemistry.
2. Yang, C.-L., Sutrisno, H., Chan, A.S., **Tampubolon, H.**, & Wibowo, B.S. (2021), Identification and analysis of weather-sensitive roads based on smartphone sensor data: A case study in Jakarta, *Sensors*, 21, 2405. [DOI](#)  
SCI, IF 2020: 3.576, Rank 26/87 in Chemistry, Analytical, 82/273 in Engineering, Electrical & Electronic, 14/64 in Instruments & Instrumentation
3. C. -L. Yang, **H. Tampubolon**, A. Setyoko, K. -L. Hua, M. Tanveer, W. Wei. "Secure and

Privacy-Preserving Human Interaction Recognition of Pervasive Healthcare Monitoring," to appear in IEEE Transactions on Network Science and Engineering (IEEE TNSE), 2022.[\[DOI\]](#)

SCI, IF 2021: 5.033, Rank 9/108 in Mathematics, Interdisciplinary Applications, Rank 18/92 in Engineering, Multidisciplinary, Rank 4/132 in Mathematics, Interdisciplinary Applications (JCI), Rank 7/175 in Engineering, Multidisciplinary(JCI)

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## Conference proceedings (Peer reviewed)

1. C. -L. Yang, A. Setyoko, **H. Tampubolon** and K. -L. Hua, "Pairwise Adjacency Matrix on Spatial Temporal Graph Convolution Network for Skeleton-Based Two-Person Interaction Recognition," *2020 IEEE International Conference on Image Processing (ICIP)*, Abu Dhabi, United Arab Emirates, Oct. 25-28, 2020, pp. 2166-2170, doi:10.1109/ICIP40778.2020.9190680.
2. **H. Tampubolon** and P. -A. Hsiung, "Supervised Deep Learning Based for Traffic Flow Prediction," *2018 International Conference on Smart Green Technology in Electrical and Information Systems (ICSGTEIS)*, Bali, Indonesia, Oct.25-27,2018, pp. 95-100, doi:10.1109/ICSGTEIS.2018.8709102.
3. **H. Tampubolon**, A. Setyoko, and F. Purnamasari, "SNPE-SRGAN: Lightweight Generative Adversarial Networks for Single-Image Super-Resolution on Mobile Using SNPE Framework," *5th International Conference on Computing and Applied Informatics (ICCAI 2020)*, Medan, Indonesia, Dec. 1-2, 2020 doi: 10.1088/1742-6596/1898/1/012038.
4. N. Sevani, **H. Tampubolon**, J. Wijaya, L.Cuvianto, and A. Salomo. "A study of Convolution Neural Network Based Cataract Detection with Image Segmentation," 2022 IEEE International Conference on Communication, Networks and Satellite (COMNETSAT), 2022 (*to be appeared*)

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## Invited talks

1. *Full Stack Development Kickstart*, at National Startup Summit 2018, Co-organized by Arrbey Consulting (Neo Soho Podomoro City), Jakarta, Indonesia, 6-8 February 2018.

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## Working papers

1. **H. Tampubolon**, C. -L. Yang, K. -L. Hua. Privacy-Preserving Child-Presence and Safety Detection in a Cars with mmWave Sensor
2. **H. Tampubolon**, C. -L. Yang, K. -L. Hua. ARCU-GAN: Generative Adversarial Network with Artist's Rules Control Units for Fine Grained Image Editing

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## Courses offered

2017 Spring      **Main Instructor INF313 Software Engineering(Undergraduate)**  
Department of Informatics, UKRIDA, Jakarta  
**SI2WP007 Database System (Undergraduate)**  
Department of Information System, UKRIDA, Jakarta  
**SI4205 System Information Engineering (Undergraduate)**  
Department of Information System, UKRIDA, Jakarta

2017 Fall      **Co-Instructor – SI5405 Expert System (Undergraduate)**  
*Department of Information System, UKRIDA, Jakarta*  
Main instructor: Cynthia Hayat

2015 Fall      **Teaching Assistant – R Programming fo Data Science (in English - Graduate)**  
*Department of Computer Science and Inf. Eng. (CSIE), CCU, Chiayi ,Taiwan*  
- Delivered 14 weeks in-person practicum classes at CSIE CCU, Instructor: Prof. Pao-Ann, Hsiung, Ph.D.

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