

# Punnawish Thuwajit

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## Education

**University of Wisconsin Madison, Class of 2026 (Madison, WI, USA)**

**2022 – Present**

*GPA: 4.00 Computer Sciences and Mathematics Majors, related coursework includes:*

- CS639 (Deep Learning in Computer Vision)
- CS400 (Programming III)
- MATH376 (Multiwearable Calc & Differential Eq.)
- MATH375 (Multiwearable Calc & Linear Algebra)

**Suankularb Wittayalai School (Bangkok, Thailand)**

**2016 – 2022**

*GPA: 4.00 Graduated Valedictorian*

## Technologies

- **Languages:** Python, Java, JavaScript, Bash, HTML, CSS, LaTeX
- **Machine/Deep Learning:** (Development) PyTorch, TensorFlow, SK-Learn (Deployment) Streamlit, Flask, Ngrok
- **Data Sciences:** (Analysis) NumPy, SciPy, Pandas (Visualization) Matplotlib, Plotly, Seaborn

## Work Experiences

**Waisman Center, UW-Madison (Madison, WI, USA)**

**2022 – Present**

*Team Member and Research Intern: Undergraduate Student*

- Currently working on denoising fast and noisy (1-2 minutes) MRI scans into meaningful brain images.

**Faculty of Medicine Siriraj Hospital, Mahidol University (Bangkok, Thailand)**

**2022 – Present**

*Post-hackathon Collaboration*

- Currently working on implementing a real-time in ward blood pressure (along with other vital signs) monitoring for hypertension, cardiovascular disease, and myocardial infarction patients.
- Planned to extend into an AI-in-medicine service under the name "RuOK - Make Sure They are OK".

**NXPO (Higher Education Science Research Policy Council) (Bangkok, Thailand)**

**2021 – 2022**

*Intern: AI Engineer*

- Analyzed over 1 million publications to determine weak signals of growing fields in research for policy construction.

**Department of Computer Engineering, Chulalongkorn University (Bangkok, Thailand)**

**2021 – 2022**

*Intern: AI Engineer*

- Developed a full-stack application for schistocyte detection and enumeration from blood smear images of anemia patients.

**Vidyasirimedhi Institute of Science and Technology (VISTEC) (Rayong, Thailand)**

**2020 – Present**

*Team Member and Research Intern: Undergraduate (formerly High-school) Student*

- Developed a fast and accurate algorithm for seizure detection via EEG signals for epilepsy diagnosis.
- Developed a novel algorithm for respiratory rate estimation via wearable PPG signals for real-time monitoring.
- Currently working on an algorithm for real time sleep-staging and sleep disorder analysis via wearable PPG signals.

## Publications

- Osathitporn, P., Sawadwuthikul, G., **Thuwajit, P.**, Ueafuea, K., Mateepithaktham, T., Kunaseth, N., ... & Wilaiprasitporn, T. (2022). RRWaveNet: A Compact End-to-End Multi-Scale Residual CNN for Robust PPG Respiratory Rate Estimation. *arXiv preprint arXiv:2208.08672*. (**Co-corresponding Author**)
- **Thuwajit, P.**, Rangpong, P., Sawangjai, P., Autthasan, P., Chaisaen, R., Banluesombatkul, N., ... & Wilaiprasitporn, T. (2021). EEGWaveNet: Multiscale CNN-based spatiotemporal feature extraction for EEG seizure detection. *IEEE Transactions on Industrial Informatics*, 18(8), 5547-5557.

## Awards and Certifications

- **TensorFlow Certificate for Machine Learning Development:** awarded for fluency in the framework.
- **Regeneron ISEF 2022 Finalist:** International Science and Engineering Fair (Atlanta, GA, USA)
- **Medical Innovation Hackathon Awards:** first and second awards for hackthons hosted by the Faculty of Medicines Ramathibodi and Siriraj Hospitals, Mahidol University (respectively).
- **Mathematics Olympiad:** Thailand Mathematics Olympiad gold medalist, IMO team selection camp attendee.

## Additional Skills

- **Bilingualism:** English (Proficient), Thai (Native)
- **Origami Artist:** designer and folder. Combined mathematical concepts into designing new models.

## Reference Persons

- **Assist. Prof. Theerawit Wilaiprasitporn, PhD (VISTEC, Rayong, Thailand):** [theerawit.w@vistec.ac.th](mailto:theerawit.w@vistec.ac.th)
- **Steven Kecskemeti, PhD (Medical Physics, UW-Madison, WI, USA):** [kecskemeti@wisc.edu](mailto:kecskemeti@wisc.edu)