Tsaipei Wang, Associate Professor

實驗室名稱：Computational Intelligence and Image Analysis Lab

學位：

Ph.D., Physics (U. Oregon)

Ph.D., Computer Engineering & Computer Science (U. Missouri-Columbia)

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[Teaching] 先用這幾個簡單做列表

Artificial Intelligence (Graduate): Spring 2026

Pattern Recognition (Graduate): Fall 2025, Spring 2025

Undergraduate Artificial Intelligence Capstone (Undergraduate): Spring 2025

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[Research] 我先放兩個現在的(ongoing research)和兩個從前的(past research)，先做模板，之後再加。我是想說這頁面上下可以分這兩個大段落。每個論文要有原文連結（我先放了一個當示範），可以從google scholar中搜尋，連結儘量用原出版者(IEEE或Elsevier或Spinger)自己的頁面。

\* Ongoing Research

**People detection and analysis in top-view fisheye camera images**

We extend existing people detection and segmentation methods to top-view fisheye camera images. More recent projects include pose and action recognitions in such images.

Selected publications:

* Sheng-Ho Chiang, Tsaipei Wang, Yi-Fu Chen (2021, Jan). Efficient pedestrian detection in top-view fisheye images using compositions of perspective view patches. Image and Vision Computing. [LINK](https://www.sciencedirect.com/science/article/pii/S0262885620302018?casa_token=dd6NOhFU5Y4AAAAA:9VxsP8_hOm7EREMtOR0bVn554kgodH3hv8A1VkBXoS-Ps66gM9TbONoIc2aDjUNst9cvyblXLww)
* Tsaipei Wang, Yun-Yi Hsieh, Fong-Wen Wong, Yi-Fu Chen (2019, Nov). Mask-RCNN based people detection using a top-view fisheye camera. 2019. International Conference on Technologies and Applications of Artificial (TAAI).
* Tsaipei Wang, Chia-Wei Chang, Yu-Shan Wu (2017, Nov). Template-Based People Detection Using A Single Downward-Viewing Fisheye Camera. IEEE International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS).

**Localization and augmented reality visualization technology for dialysis fistula.**

The integrated presentation of the vascular centerline obtained by multi-angle X-ray angiography and the external 3D scanning results. The localization accuracy is evaluated by using a metal as a simulated blood vessel. The error is less than the diameter of the blood vessel, which has practical value.

Selected publications:

* Yu-Chi Chen, Chiu-Yang Lee, Tai-Wei Chen, Jie-Shi Tsai, Tsaipei Wang (2024, Jul). 3D Vessel Visualization Techniques for Dialysis Fistulae. 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society.

\* Past Research

**Shell clustering algorithms for arbitrary shapes**

We developed shell clustering algorithm using template-based prototypes and alternating optimization. We were the first to apply shell clustering to such data. The latest achievement is to cluster highly elastic templates, which further breaks through the shape limitations that could be used for object detection in the past and can be used to detect objects with different degrees of deformation.

Selected publications:

* Tsaipei Wang, Wen-Liang Hung (2016, Jul). A generalized possibilistic approach to shell clustering of template-based shapes. Journal of Statistical Computation and Simulation, 87(3), 423-436.
* Tsaipei Wang (2016, Jul). A Flexible Possibilistic C-Template Shell Clustering Method with Adjustable Degree of Deformation. IEEE International Conference on Fuzzy Systems (FUZZ-IEEE).

**Simulated car racing games**

We studied various topics related to simulated car racing games, including optimization methods for driving behaviors as well as recognition and emulation of human players.

Selected publications:

* Han-Hsien Huang, Tsaipei Wang (2015, Sep). Learning Overtaking and Blocking Skills in Simulated Car Racing. 2015 IEEE Conference on Computational Intelligence and Games (CIG)
* Tsaipei Wang, Keng-Te Liaw (2014, Jun). Driving Style Imitation in Simulated Car Racing Using Style Evaluators and Multi-objective Evolution of a Fuzzy Logic Controller. IEEE 2014 Conference on Norbert Wiener in the 21st Century.

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