

# Yun-Wei Chu

West Lafayette, IN, USA

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## Education

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### Purdue University

*Ph.D. student in Electrical and Computer Engineering*

West Lafayette, IN

*Jan 2021 - Present*

### National Chiao Tung University

*M.S. in Electrical and Control Engineering*

Hsinchu, Taiwan

*Sep 2015 - Nov 2017*

### National Chi Nan University

*B.S. in Electrical Engineering*

Nantou, Taiwan

*Sep 2011 - Jun 2015*

## Research & Teaching Experience

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### Research Assistant. Purdue University

*Advisor: Prof. Christopher Brinton*

West Lafayette, IN

*Jan 2021 - present*

#### • Video-watching Clickstream Analysis

- Distilled click-events for each learner from EdX dataset; Performed various clustering algorithms on learners' video clickstream to identify learner's behavior

### Research Assistant. Academia Sinica

*Advisor: Dr. Lun-Wei Ku*

Taipei, Taiwan

*Apr 2019 - Dec 2020*

#### • Visual Storytelling

- Implemented knowledge graphs to enrich the story content and planned a story plot before generating stories to increase coherence; Integrated Transformer with designed discriminator which aligns human judgement to refine visual stories.
- Designed a length-controlled Transformer to generate prolonged visual stories with better focus and detail.
- Assisted on developing a website in Amazon Mechanical Turk for human evaluations on story quality.

#### • Video Dialogue Question Answering

- Developed multi-step joint-modality attention network based on recurrent neural network to reason better on dynamic scenes.

#### • Multiview Items Recommendation

- Designed a GNN-based user-oriented module that aggregate features to make personalized recommendations.

### Research Assistant. National Chiao Tung University

*Advisor: Prof. Bing-Fei Wu*

Hsinchu, Taiwan

*Sep 2015 - Nov 2017*

#### • Personalized Image-based Heart Rate Detection

- Developed an Adaptive Neural Network Model Selection algorithm to dynamically select personalized model and eliminate facial luminance variation noise from rPPG signal.
- Re-designed C++-based algorithm into JAVA-based heart rate detection APP; Implemented APP on SiME smart glasses to determine targets' tension.
- Drafted a grant proposal, including both research proposal and budget planning.

### Teaching Assistant. National Chiao Tung University

*Digital Signal Processing (IEC5202)*

*Feb 2016 - Sep 2016*

*Student Service Education (UEE1001)*

*Sep 2016 - Feb 2017*

## Publications

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### Journal Papers

[1] **Neural Network Based Luminance Variation Resistant Remote-Photoplethysmography for Driver's Heart Rate Monitoring.** B.-F. Wu, Y.-W. Chu, P.-W. Haung, M.-L. Chung. *IEEE Access*, 2019.

### Conference Papers

[2] **Let's Talk! Striking Up Conversations via Conversational Visual Question Generation.** S.-H. Chan, T.-L. Yang, Y.-W. Chu, C.-Y. Hsu, T.-H. Huang, Y.-S. Chiu and L.-W. Ku *AAAI workshop on Reasoning and Learning for Human-Machine Dialogues*, 2021.

[3] **Multi-step Joint-Modality Attention Network for Audio Visual Scene-Aware Dialog System.** Y.-W. Chu, K.-Y. Lin, C.-C. Hsu, L.-W. Ku. *AAAI workshop on Dialog System Technology Challenge*, 2020.

- [4] **MVIN: Learning multi-view items for recommendation.** C.-Y. Tai, M.-R. Wu, **Y.-W. Chu**, S.-Y. Chu, L.-W. Ku. *International ACM SIGIR Conference*, 2020.
- [5] **A Motion Robust Remote-PPG Approach to Driver's Health State Monitoring.** B.-F. Wu, **Y.-W. Chu**, P.-W. Haung, M.-L. Chung. *ACCV workshop on Computer Vision Technologies for Smart Vehicle*, 2016.
- [6] **Applied kNN and SVM classification in image-based Photoplethysmography.** B.-F. Wu, **Y.-W. Chu**, P.-W. Haung, M.-L. Chung. *MATLAB and Simulink conference*, 2016.

### Preprint

- [7] **GraphSW: a training protocol based on stage-wise training for GNN-based Recommender Model.** C.-Y. Tai, M.-R. Wu, **Y.-W. Chu**, S.-Y. Chu, L.-W. Ku. *arXiv preprint*, 2020

### Patents

- Non-contact Heartbeat Rate Measurement System, Method and Apparatus Thereof. B.-F. Wu, M.-L. Chung, T.-Y. Tsou, Y.-W. Chu, K.-H. Chen, P.-W. Huang, Y.-Y. Lin. *US Patent #10835135*, Issued Nov 2020.
- Non-contact Heartbeat Rate Measurement Apparatus. B.-F. Wu, M.-L. Chung, T.-Y. Tsou, Y.-W. Chu. *Taiwan Patent #I667635*, Issued Aug 2019.
- Monitoring System and Monitoring Method for Infant. B.-F. Wu, M.-L. Chung, T.-Y. Tsou, Y.-W. Chu. *Taiwan Patent #I658815*, Issued May 2019.

### Grants & Awards

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| [a] <b>Travel Grant (\$3000)</b> , For attending AAAI Conference, Academia Sinica                         | 2020      |
| [b] <b>Research Scholarship for Graduate Student (\$7000)</b> , Ministry of Science and Technology Taiwan | 2015-2016 |
| [c] <b>Venture Capital (\$650k)</b> , Ministry of Science and Technology Taiwan                           | 2016      |
| [d] <b>Special Award of MediaTek IoT Competition</b> , Industrial Development Bureau, Taiwan              | 2016      |
| [e] <b>Outstanding Team Award of NCTU Talentrepreneur Innovation Competition</b> , NCTU, Taiwan           | 2016      |
| [f] <b>3rd place of TIC100 Talentrepreneur Innovation Competition</b> , Advantech Inc., Taiwan            | 2016      |

### Academic Service

#### Peer Reviewer

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| The European Chapter of the Association for Computational Linguistics (EACL)           | 2021      |
| International Conference on Computational Linguistics (COLING)                         | 2021      |
| The Annual Meeting of the Association for Computational Linguistics (ACL)              | 2020      |
| The International Workshop on Natural Language Processing for Social Media (SocialNLP) | 2020      |
| The Annual Conference on Innovative Applications of Artificial Intelligence (IAAI)     | 2020-2021 |
| IEEE ACCESS  | 2019      |

### Skills

- Programming Languages:** Python, C/C++, Matlab
- Machine Learning Toolkits::** PyTorch, Tensorflow, Scikit-learn, NLTK
- Machine Learning Techniques::** Natural Language Processing, Multi-modal Processing, Graphical Theory, Deep Reinforcement Learning
- Languages:** Mandarin (native), English (professional working proficiency)