

## Ho Kei (Rex) CHENG

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### Education

**Ph.D. in Computer Science, University of Illinois Urbana-Champaign, Illinois, United States**

*Aug 2021 – May 2026 (expected)*

Advised by Alexander Schwing

**MPhil in Computer Science, The Hong Kong University of Science and Technology, Hong Kong**

*Sep 2019 – Aug 2021*

Advised by Chi-Keung Tang and Yu-Wing Tai

Thesis: Efficient Video Object Segmentation with Space-Time Correspondence Networks

**BEng in Computer Science, The Hong Kong University of Science and Technology, Hong Kong**

*Sep 2015 – Aug 2019*

With a minor in Robotics

### Publications

XMem: Long-Term Video Object Segmentation with an Atkinson-Shiffrin Memory Model; **Ho Kei Cheng**, Alexander Schwing; *ECCV 2022*; also accepted to *Computer Vision for Metaverse Workshop 2022* and *Workshop on AI for Creative Video Editing and Understanding* [\[link\]](#)

- Reframes video object segmentation as a *memory* problem – methods vary in representation and memory reading mechanism
- Our method mimics the human memory model to construct multiple feature memory stores
- Enable us to be the first to handle long videos with minimal sacrifice in accuracy

Rethinking Space-Time Networks with Improved Memory Coverage for Efficient Video Object Segmentation; **Ho Kei Cheng**, Yu-Wing Tai, Chi-Keung Tang; *NeurIPS 2021* [\[link\]](#)

- Rethinks mask tracking as a *correspondence* problem
- Large performance gain (81.8->85.4), with almost double FPS (10.2->20.2)
- [YouTubeVOS 2021 challenge](#): 1st place in novel classes, 2nd place overall

Modular Interactive Video Object Segmentation: Interaction-to-Mask, Propagation and Difference-Aware Fusion; **Ho Kei Cheng**, Yu-Wing Tai, Chi-Keung Tang; *CVPR 2021* [\[link\]](#)

- Reformulates interactive video segmentation, boost accuracy and ease of use to a practical level
- Used by data annotators and movie studios: [\[Sievel\]](#), [\[Trioscope\]](#)

CascadePSP: Toward Class-Agnostic and Very High-Resolution Segmentation via Global and Local Refinement; **Ho Kei Cheng\***, Jihoon Chung\*, Yu-Wing Tai, Chi-Keung Tang; *CVPR 2020* [\[link\]](#)

- Generates 4K, pixel-accurate segmentation from low-res segmentation by iterative refinement
- \*equal contributions

### Work Experience

**Research Scientist Intern, Adobe Research; Summer 2022**

Worked closely with Seoung Wug Oh, Brian Price, and Joon-Yong Lee.

### Professional Activities

- Reviewer for CVPR, ICCV, ECCV, NeurIPS, ICML, IEEE TIP, IEEE PR, IEEE TPAMI
- Outstanding reviewer (top 10%) in ICML 2022
- TAs for multiple undergraduate and graduate level computer vision and deep learning courses