



# HangChu

Computer Vision Researcher

## Tel & Skype

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## Mail

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## Website

chuhang.github.io

## Programming

Proficient in

Python  
Matlab  
C/C++

Experience in

Javascript  
VHDL  
Java  
Julia  
Lua

## Software Skills

OpenCV  
ROS  
LabVIEW  
Caffe  
TensorFlow  
Torch  
PyTorch  
WebGL  
Node.js  
L<sup>A</sup>T<sub>E</sub>X

## Languages

Mandarin (*native*)  
English (*proficient*)  
Spanish (*beginner*)

## Education

- 2016 - 2020 **Ph.D. in Machine Learning** University of Toronto  
GPA: 4.00/4.00  
Thesis: Deep Learning Techniques for Digital Content Generation  
Worked with Raquel Urtasun and Sanja Fidler
- 2013 - 2015 **M.S. in Electrical and Computer Engineering** Cornell University  
GPA: 4.00/4.00 (rank 1/8)  
Thesis: Vision-based Localization with Map Information  
Advisors: Tsuhan Chen and Ashutosh Saxena
- 2009 - 2013 **B.S. in Information Engineering** Shanghai Jiao Tong University  
Major GPA: 3.90/4.30 (91.2/100) (rank 20/290)  
Thesis: A Heat-Map-based Algorithm for Group Activity Recognition  
Excellent Bachelor Thesis Award (3/290)  
Advisors: Weiyao Lin and Wu-Jun Li

## Experience

- 05/20 - Now **Principal Research Scientist** Autodesk  
Autodesk AI Lab.
- 05/19 - 04/20 **Research Intern / Research Collaborator** Facebook  
Facebook Reality Labs, with Shugao Ma.  
Human face modeling and VR telepresence.
- 05/18 - 04/19 **Research Intern** Nvidia  
Deep Learning Research, with Sanja Fidler.  
3D content generation for simulation.
- 05/17 - 08/17 **Research Intern** Google  
Machine Perception Research, with Utsav Prabhu and Andrew Gallagher.  
Video semantic understanding and partitioning.
- 10/15 - 06/16 **Visiting Researcher** University of Toronto  
Machine Learning Group, with Raquel Urtasun and Sanja Fidler.  
Semantic scene understanding.
- 06/15 - 10/15 **Research Intern** Toyota Technological Institute  
Robot Intelligence Through Perception Lab, with Matthew Walter.  
Cross-view localization and localization in forest environment.
- 06/14 - 08/14 **Research Intern** Volkswagen  
Electronic Research Lab, with Anh Vu.  
High-resolution road-lane image registration for mapping.

## Courses

### Undergraduate

Linear Algebra (A+)  
Discrete Math (A+)  
Probability & Statistics (A)  
Image Processing (A)  
Signal Processing (A)

### Graduate

Computer Vision (A+)  
Medical Image Analysis (A+)  
Generative Models (A+)  
Blockchain (A+)  
Robot Learning (A)  
Numerical Analysis (A)  
Heuristic Optimization (A-)

### Certified

Machine Learning  
Graphical Models

## Services

### Conference Reviewer

CVPR-19,20,21,22  
ICCV-17,19,21  
ECCV-20,22  
ACCV-20  
BMVC-17  
WACV-21,22  
NIPS-16  
ICLR-22  
AAAI-20,21,22  
ICRA-19,20  
IROS-16  
ICME-18,19,20

### Journal Reviewer

IEEE-PAMI  
IEEE-CSVT  
IEEE-Cybernetics  
IEEE-NNLS  
IEEE-ITS  
Springer-CSSP  
Elsevier-PR  
Elsevier-VCIR  
Elsevier-SPIC  
Wiley-SCN

### Editorial Board

Frontiers-SPIP

## Awards

Vector Research Grant  
2018-2020  
UofT Fellowship  
2016-2020  
ICCV Doctral Consortium  
2019  
ICRA Travel Award  
2015  
Bachelor Thesis Award  
2013  
ACM MM Travel Award  
2012  
Pan Wen Yuan Scholarship  
2010  
SJTU Scholarship  
2009-2013

## Publications

### Patent

#### [1] Partitioning Videos

**Hang Chu**, Michael Nechyba, Andrew Gallagher, Utsav Prabhu  
US Patent 10628486, Google, 2019.

#### [2] Iterative Spatial Graph Generation

**Hang Chu**, Daiqing Li, David Acuna, Amlan Kar, Maria Shugrina,  
Ming-Yu Liu, Antonio Torralba, Sanja Fidler  
US Patent App. 16/825199, Nvidia, 2020.

### Journal

- [3] A Heat-Map-based Algorithm for Recognizing Group Activities in Videos [\[pdf\]](#)[\[demo\]](#)  
Weiyao Lin, **Hang Chu**, Jianxin Wu, Bin Sheng, and Zhenzhong Chen  
*IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)*, 2013.

### Conference

- [4] SimCURL: Simple Contrastive User Representation Learning from Command Sequences

**Hang Chu**, Joseph G. Lambourne, Amir Hosein Khasahmadi, Karl D.D. Willis,  
Fraser Anderson, Yaoli Mao, Linh Tran, Justin Matejka, Jo Vermeulen  
*Knowledge Discovery and Data Mining (KDD)*, 2022 (submitted).

- [5] CLIP-Forge: Towards Zero-Shot Text-to-Shape Generation [\[pdf\]](#)

Aditya Sanghi, **Hang Chu**, Joseph G. Lambourne, Ye Wang, Chin-Yi Cheng,  
Marco Fumero  
*Computer Vision and Pattern Recognition (CVPR)*, 2022.

- [6] JoinABLE: Learning Bottom-up Assembly of Parametric CAD Joints [\[pdf\]](#)

Karl D.D. Willis, Pradeep Kumar Jayaraman, **Hang Chu**, Yunsheng Tian,  
Yifei Li, Daniele Grandi, Aditya Sanghi, Linh Tran, Joseph G. Lambourne,  
Armando Solar-Lezama, Wojciech Matusik  
*Computer Vision and Pattern Recognition (CVPR)*, 2022.

- [7] LSD-StructureNet: Modeling Levels of Structural Detail in 3D Part Hierarchies [\[pdf\]](#)

Dominic Roberts, Ara Danielyan, **Hang Chu**, Mani Golparvar-Fard, David Forsyth  
*International Conference on Computer Vision (ICCV)*, 2021.

- [8] House-GAN++: Generative Adversarial Layout Refinement Networks [\[pdf\]](#)[\[demo\]](#)

Nelson Nauata, Sepidehsadat Hosseini, Kai-Hung Chang, **Hang Chu**, Chin-Yi Cheng,  
Yasutaka Furukawa  
*Computer Vision and Pattern Recognition (CVPR)*, 2021.

- [9] Fusion 360 Gallery: A Dataset and Environment for Programmatic CAD  
Reconstruction [\[pdf\]](#)

Karl D.D. Willis, Yewen Pu, Jieliang Luo, **Hang Chu**, Tao Du, Joseph G. Lambourne,  
Armando Solar-Lezama, Wojciech Matusik  
*ACM SIGGRAPH (SIGGRAPH)*, 2021.

- [10] Expressive Telepresence via Modular Codec Avatar [\[pdf\]](#)[\[demo\]](#)

**Hang Chu**, Shugao Ma, Fernando De la Torre, Sanja Fidler, Yaser Sheikh  
*European Conference on Computer Vision (ECCV)*, 2020.

## Places Lived

Toronto, ON  
Pittsburgh, PA  
Chicago, IL  
Bay Area, CA  
Ithaca, NY  
Shanghai, China  
Shijiazhuang, China

- [11] Neural Turtle Graphics for Modeling City Road Layouts [[pdf](#)][[demo](#)]  
**Hang Chu**, Daiqing Li, David Acuna, Amlan Kar, Maria Shugrina, Xinkai Wei, Ming-Yu Liu, Antonio Torralba, Sanja Fidler  
*International Conference on Computer Vision (ICCV)*, **oral**, 2019.
- [12] Single Image Intrinsic Decomposition without a Single Intrinsic Image [[pdf](#)]  
Wei-Chiu Ma, **Hang Chu**, Bolei Zhou, Raquel Urtasun, Antonio Torralba  
*European Conference on Computer Vision (ECCV)*, 2018.
- [13] A Face-to-Face Neural Conversation Model [[pdf](#)][[demo](#)]  
**Hang Chu**, Daiqing Li, Sanja Fidler  
*Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [14] SurfConv: Bridging 3D and 2D Convolution for RGBD Images [[pdf](#)][[code](#)]  
**Hang Chu**, Wei-Chiu Ma, Kaustav Kundu, Raquel Urtasun, Sanja Fidler  
*Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [15] TorontoCity: Seeing the World with a Million Eyes [[pdf](#)]  
Shenlong Wang, Min Bai\*, Gellert Mattyus\*, **Hang Chu\***, Wenjie Luo, Bin Yang, Justin Liang, Joel Cheverie, Sanja Fidler, Raquel Urtasun  
*International Conference on Computer Vision (ICCV)*, 2017.
- [16] HouseCraft: Building Houses from Rental Ads and Street Views [[pdf](#)][[demo](#)][[code](#)]  
**Hang Chu**, Shenlong Wang, Raquel Urtasun, Sanja Fidler  
*European Conference on Computer Vision (ECCV)*, 2016.
- [17] You Are Here: Mimicking the Human Thinking Process in Reading Floor-Plans [[pdf](#)][[demo](#)]  
**Hang Chu**, Dong-Ki Kim, Tsuhan Chen  
*International Conference on Computer Vision (ICCV)*, 2015.
- [18] Consistent Ground-Plane Mapping: A Case Study Utilizing Low-Cost Sensor Measurements and a Satellite Image [[pdf](#)][[demo](#)]  
**Hang Chu**, Anh Vu  
*International Conference on Robotics and Automation (ICRA)*, 2015.
- [19] A New HeatMap-based Algorithm for Human Group Activity Recognition [[pdf](#)][[demo](#)]  
**Hang Chu**, Weiyao Lin, Jianxin Wu, Xingtong Zhou, Yuanzhe Chen, Hongxiang Li  
*ACM Multimedia (SIGMM)*, 2012.

## Workshop

- [20] Engineering Sketch Generation for Computer-Aided Design [[pdf](#)]  
Karl D.D. Willis, Pradeep Kumar Jayaraman, Joseph G. Lambourne, **Hang Chu**, Yewen Pu  
*Computer Vision and Pattern Recognition Workshop (CVPRW)*, 2021.
- [21] Song From PI: A Musically Plausible Network for Pop Music Generation [[pdf](#)][[demo](#)]  
**Hang Chu**, Raquel Urtasun, Sanja Fidler  
*International Conference on Learning Representations Workshop (ICLRW)*, 2016.
- [22] Accurate Vision-based Localization by Transferring Between Ground and Satellite Images [[pdf](#)]  
**Hang Chu**, Hongyuan Mei, Mohit Bansal, Matthew Walter  
*Neural Information Processing Systems Workshops (NIPSWS)*, 2015.

- [23] GPS Refinement and Camera Orientation Estimation from a Single Image and a 2D Map [\[pdf\]](#)[\[demo\]](#)[\[code\]](#)  
**Hang Chu**, Andrew Gallagher, Tsuhan Chen  
*Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2014.