

# Angela Dai | Curriculum Vitae

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## Current Position

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- **Technical University of Munich, Assistant Professor** 2020 - present

## Education

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- **Stanford University** **Sept. 2018**  
PhD in Computer Science, Advisor: Pat Hanrahan  
Stanford, CA, USA
- **Stanford University** **Sept. 2017**  
MS in Computer Science  
Stanford, CA, USA
- **Princeton University** **June 2013**  
BSE in Computer Science, Magna Cum Laude  
Princeton, NJ, USA

## Research and Industry Experience

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- **Junior Research Group Leader** **Technical University of Munich**  
ZD.B Junior Research Group, Munich, Germany  
1.25 million€/ 5 years to supervise PhD students. Host: Rüdiger Westermann.  
03/2019-
- **Postdoctoral Fellow** **Technical University of Munich**  
TUM Foundation Fellowship, Munich, Germany  
Host: Rüdiger Westermann.  
10/2018-02/2019
- **Intern** **Google**  
Google Tango, Daydream, Munich, Germany  
Large-scale scene completion for 3D scans (Mentor: Jürgen Sturm).  
09/2017-12/2017
- **Resarch Intern** **Adobe Systems**  
Creative Technologies Lab, San Francisco, CA  
Automatic synthesis of hidden transitions in interview video (Mentor: Wilmot Li).  
06/2013-08/2013

## Awards and Distinctions

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- 2022 Eurographics Young Researcher Award.
- 2022 Google Research Scholar Award.
- 2021 Top 40 under 40, Capital Magazine.
- 2020 SGP Dataset Award, ScanNet.
- 2019 Honorable Mention; ACM SIGGRAPH Outstanding Doctoral Dissertation Award.
- 2019- ZDB Junior Research Group Award. 1.25 million€/ 5 years to supervise PhD students.
- Oct. 2018 Rising Stars in EECS. Awarded to 76 EECS graduate and postdoctoral women.
- Sept. 2018 Heidelberg Laureate Forum. Awarded to 200 young math and computer science researchers.
- 2018-2019 Technical University of Munich Foundation Fellowship.
- 2013-2018 Stanford Graduate Fellowship, Professor Michael J. Flynn Fellow.
- June 2013 Program in Applied and Computational Mathematics Certificate Prize, Princeton University.  
Awarded annually to 2 senior undergraduates studying applied and computational mathematics.
- June 2013 Phi Beta Kappa, Academic Honor Society.
- June 2013 Tau Beta Pi, Academic Honor Society.

- 2012 Google Anita Borg Memorial Scholar.
- Dec. 2011 Facebook College Hackathon Finals, 1<sup>st</sup> place.
- 2009-2010 Shapiro Prize for Academic Excellence, Princeton University.
- 2010 Honorable Mention; Mathematical Contest in Modeling.

## Teaching Experience

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- Instructor Deep Learning for 3D Perception Practical (Technical University of Munich, Summer 2022).
- Instructor Geometric Modeling and Visualization (Technical University of Munich, Summer 2022).
- Instructor Machine Learning for 3D Geometry (Technical University of Munich, Summer 2021 - Summer 2022).
- Instructor 3D Machine Learning Seminar (Technical University of Munich, Summer 2021 - Summer 2022).
- Instructor 3D Scanning and Motion Capture (Technical University of Munich, Winter 2018 - Winter 2021).
- Instructor Introduction to Deep Learning (Technical University of Munich, Winter 2019).
- Teaching Assistant Introduction to Computer Graphics (Stanford University, Summer 2014, Summer 2015).

## Professional Activities

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- Workshop Organizer 4th ScanNet Indoor Scene Understanding Challenge, CVPR 2022.
- Program Committee Technical Papers Program Committee, SIGGRAPH 2022.
- Area Chair CVPR 2022.
- Tutorials Chair International Conference on 3D Vision 2021.
- Workshop Organizer 3rd ScanNet Indoor Scene Understanding Challenge, CVPR 2021.
- Program Committee Technical Papers Program Committee, SIGGRAPH 2021.
- Area Chair CVPR 2021.
- Co-Organizer 3D Geometry and Vision Seminar (Virtual Seminar Series).
- Workshop Organizer 2nd Robust Vision Challenge, ECCV 2020.
- Program Committee German Conference on Pattern Recognition 2020.
- Workshop Organizer 2nd ScanNet Indoor Scene Understanding Challenge, CVPR 2020.
- Co-Editor International Journal of Computer Vision special issue on Performance Evaluation, 2020.
- Program Committee Eurographics 2020.
- Workshop Organizer Deep Learning for Visual SLAM, ICCV 2019.
- Workshop Organizer ScanNet Indoor Scene Understanding Challenge, CVPR 2019.
- Program Committee Technical Briefs and Posters program, SIGGRAPH Asia 2019.
- COI Conflict of Interest Coordinator, SIGGRAPH 2019.
- Workshop Organizer Robust Vision Challenge, CVPR 2018.
- Reviewer For major conferences and journals (CVPR, ICCV, TPAMI, Siggraph, Siggraph Asia, etc.).

## Invited Talks

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- 05/2022 *University of Toronto*: Learning from Synthetic 3D Priors for Real-World 3D Perception (Host: Animesh Garg).
- 02/2022 *Google*: Learning 3D Priors for Semantic Image Understanding (Host: Noah Snavely).
- 01/2022 *Topics in 3D Vision Workshop, Seoul National University*: 3D Perception for Semantic Scene Understanding (Host: Young Min Kim).
- 11/2021 *AI for Robotics Workshop*: Learning from Synthetic Priors for Real-world 3D Scene Understanding.
- 11/2021 *NVIDIA GTC*: 3D Perception for Semantic Scene Understanding.
- 10/2021 *Sensing, Understanding and Synthesizing Humans ICCV'21 Workshop*: Learning to Optimize for Non-Rigid Reconstruction and Tracking Data (Host: Ziwei Liu).

- 10/2021 *Holistic Structure for 3D Vision ICCV'21 Workshop*: Structural 3D Priors for Holistic Image Understanding (Host: Yasutaka Furukawa).
- 10/2021 *Interactive Labeling and Data Augmentation for Vision ICCV'21 Workshop*: Learning to Generate 3D Scenes from Imperfect Data (Host: Frederic Ratle).
- 07/2021 *Samsung AI Center, Cambridge*: Learning to Optimize for Non-Rigid Reconstruction and Tracking (Host: Vladimir Pavlovic).
- 06/2021 *Learning from Limited or Imperfect Data CVPR'21 Workshop*: Learning from Imperfect RGB-D Scan Data (Host: Zsolt Kira).
- 05/2021 *Graphics Interface 2021*: Towards Commodity 3D Content Creation.
- 12/2020 *Machine Learning for Engineering Modeling, Simulation and Design NeurIPS'20 Workshop*: Self-Supervision for 3D Scene Generation (Host: Alex Upjohn Beatson).
- 12/2020 *Autodesk*: Towards Commodity 3D Content Creation (Host: Amir Khas Ahmadi).
- 08/2020 *Learning 3D Representations for Shape and Appearance ECCV'20 Workshop*: Self-Supervision for 3D Scene Generation (Host: Srinath Sridhar).
- 08/2020 *Long-Term Visual Localization under Changing Conditions ECCV'20 Workshop*: Understanding 3D Scans (Host: Torsten Sattler).
- 06/2020 *Max-Planck-Institute for Intelligent Systems at Tuebingen*: Towards Commodity 3D Content Creation (Host: Michael Black).
- 05/2020 *Brown University*: Towards Commodity 3D Content Creation (Host: Daniel Ritchie).
- 11/2019 *Deep Learning for Visual SLAM ICCV'19 Workshop*: 3D Reconstruction for Understanding Environments (Host: Ronald Clark).
- 06/2019 *3D Scene Generation CVPR'19 Workshop*: From Unstructured Range Scans to 3D Models (Host: Daniel Ritchie).
- 06/2019 *UC Berkeley*: Understanding 3D Scans (Host: Angjoo Kanazawa).
- 03/2019 *Carnegie Mellon University*: Understanding 3D Scans (Host: Matthew O'Toole).
- 03/2019 *ETH Zurich*: Understanding 3D Scans (Host: Marc Pollefeys).
- 03/2019 *University of Zurich*: Understanding 3D Scans (Host: Michael Böhlen).
- 02/2019 *Cornell University*: Understanding 3D Scans (Host: Steve Marschner).
- 10/2018 *Cornell University*: Learning to Complete 3D Scans (Host: Bharath Hariharan).
- 10/2018 *Harvard University*: Learning to Complete 3D Scans (Host: Hanspeter Pfister).
- 10/2018 *Massachusetts Institute of Technology*: Learning to Complete 3D Scans (Host: Justin Solomon).
- 07/2018 *Technical University of Munich Institute for Advanced Study Workshop on Machine Learning for 3D Understanding*: Learning to Complete 3D Scans (Host: Michael Bronstein).
- 05/2018 *DeepMind*: Large-Scale Completion and Understanding of 3D Scans (Host: Pushmeet Kohli).
- 05/2018 *Imperial College London*: Large-Scale Completion and Understanding of 3D Scans (Host: Andrew Davison).
- 01/2018 *Silicon Valley ACM SIGGRAPH Chapter*: Learning to Reconstruct and Understand 3D Environments (Host: Ken Turkowski).
- 11/2017 *Max Planck Institute for Informatics*: Learning to Reconstruct 3D Environments (Host: Christian Theobalt).
- 07/2017 *Shandong University Summer School*: Learning to Reconstruct and Understand 3D Environments (Host: Baoquan Chen).
- 08/2016 *University of Washington*: Real-time 3D Reconstruction (Host: Konstantinos Rematas and Brian Curless).
- 08/2016 *Microsoft Research*: Interactive Reconstruction of 3D Scenes (Host: Pushmeet Kohli).
- 05/2016 *Matterport*: From Reconstruction to Understanding of Indoor Environments (Host: Craig Reynolds).

## Selected Press Coverage

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- ScanNet Challenge, *Computer Vision News*, June 2020. <https://www.rsipvision.com/CVPR2020-Wednesday/18/>

- ScanNet, *MIT Technology Review*, April 2017. <https://www.technologyreview.com/s/604240/a-massive-new-library-of-3-d-images-could-help-your-robot-butler-get-around-your-house>
- ScanNet, *Computer Vision News*, August 2017. <http://www.rsipvision.com/ComputerVisionNews-2017August>
- ScanNet, *Next Reality*, May 2017. <https://hololens.reality.news/news/better-spatial-maps-will-make-mixed-reality-great-0176321>
- ScanNet, *Communications of the ACM*, April 2017. <https://cacm.acm.org/news/216399-a-massive-new-library-of-3d-images-could-help-your-robot-butler-get-around-your-house/fulltext>

## Publications

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P. Palafox, N. Sarafianos, T. Tung, and **A. Dai**. Spams: Structured implicit parametric models. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2022.

C. Gümeli, **A. Dai**, and M. Nießner. Roca: Robust cad model retrieval and alignment from a single image. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2022.

C. Diller, T. Funkhouser, and **A. Dai**. Forecasting characteristic 3d poses of human actions. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2022.

**A. Dai**, Y. Siddiqui, J. Thies, J. Valentin, and M. Nießner. Spsg: Self-supervised photometric scene generation from rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2021.

Y. Siddiqui, J. Thies, F. Ma, Q. Shan, M. Nießner, and **A. Dai**. Retrievalfuse: Neural 3d scene reconstruction with a database. In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2021.

P. Palafox, A. Božič, J. Thies, M. Nießner, and **A. Dai**. Npms: Neural parametric models for 3d deformable shapes. In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2021.

N. Müller, Y.-s. Wong, N. Mitra, **A. Dai**, and M. Nießner. Seeing behind objects for 3d multi-object tracking in rgb-d sequences. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2021.

W. Kuo, A. Angelova, T.-y. Lin, and **A. Dai**. Patch2cad: Patchwise embedding learning for in-the-wild shape retrieval from a single image. In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2021.

J. Hou, S. Xie, B. Graham, **A. Dai**, and M. Nießner. Pri3d: Can 3d priors help 2d representation learning? In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2021.

M. Dahnert, J. Hou, , M. Nießner, and **A. Dai**. Panoptic 3d scene reconstruction from a single rgb image. *Proc. Neural Information Processing Systems (NeurIPS)*, 2021.

A. Bozic, P. Palafox, M. Zollhöfer, J. Thies, **A. Dai**, and M. Nießner. Neural deformation graphs for globally-consistent non-rigid reconstruction. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2021.

A. Božič, P. Palafox, J. Thies, **A. Dai**, and M. Nießner. Transformerfusion: Monocular rgb scene reconstruction using transformers. *Proc. Neural Information Processing Systems (NeurIPS)*, 2021.

A. Bokhovkin, V. Ishimtsev, E. Bogomolov, D. Zorin, A. Artemov, E. Burnaev, and **A. Dai**. Towards part-based understanding of rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2021.

**A. Dai**, C. Diller, and M. Nießner. Sg-nn: Sparse generative neural networks for self-supervised scene completion of rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2020.

W. Kuo, A. Angelova, T.-y. Lin, and **A. Dai**. Mask2cad: 3d shape prediction by learning to segment and retrieve. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2020.

H. Ji, **A. Dai**, and M. Nießner. Revealnet: Seeing behind objects in rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2020.

J. Huang, J. Thies, **A. Dai**, A. Kundu, C. Jiang, L. Guibas, M. Nießner, and T. Funkhouser. Adversarial texture optimization from rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2020.

A. Bozic, P. Palafox, M. Zollhöfer, **A. Dai**, J. Thies, and M. Nießner. Neural non-rigid tracking. In *Advances in Neural Information Processing Systems*, 2020.

- A. Avetisyan, T. Khanova, C. Choy, D. Dash, **A. Dai**, and M. Nießner. Scenecad: Predicting object alignments and layouts in rgb-d scans. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2020.
- A. Dai** and M. Nießner. Scan2mesh: From unstructured range scans to 3d meshes. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2019.
- J. Hou, **A. Dai**, and M. Nießner. 3d-sis: 3d semantic instance segmentation of rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2019.
- M. Dahnert, **A. Dai**, L. Guibas, and M. Nießner. Joint embedding of 3d scan and cad objects. In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2019.
- A. Avetisyan, **A. Dai**, and M. Nießner. End-to-end cad model retrieval and 9dof alignment in 3d scans. In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2019.
- A. Avetisyan, M. Dahnert, **A. Dai**, M. Savva, A. X. Chang, and M. Nießner. Scan2cad: Learning cad model alignment in rgb-d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2019.
- A. Dai**, D. Ritchie, M. Bokeloh, S. Reed, J. Sturm, and M. Nießner. Scancomplete: Large-scale scene completion and semantic segmentation for 3d scans. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2018.
- A. Dai** and M. Nießner. 3dmv: Joint 3d-multi-view prediction for 3d semantic scene segmentation. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2018.
- A. Dai**, C. R. Qi, and M. Nießner. Shape completion using 3d-encoder-predictor cnns and shape synthesis. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2017.
- A. Dai**, M. Nießner, M. Zollhöfer, S. Izadi, and C. Theobalt. Bundlefusion: Real-time globally consistent 3d reconstruction using on-the-fly surface re-integration. *ACM Transactions on Graphics 2017 (TOG)*, 2017.
- A. Dai**, A. X. Chang, M. Savva, M. Halber, T. Funkhouser, and M. Nießner. Scannet: Richly-annotated 3d reconstructions of indoor scenes. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2017.
- J. Huang, **A. Dai**, L. Guibas, and M. Nießner. 3dlite: Towards commodity 3d scanning for content creation. *ACM Transactions on Graphics 2017 (TOG)*, 2017.
- A. Chang, **A. Dai**, T. Funkhouser, M. Halber, M. Niessner, M. Savva, S. Song, A. Zeng, and Y. Zhang. Matterport3D: Learning from RGB-D data in indoor environments. *International Conference on 3D Vision (3DV)*, 2017.
- J. Valentin, **A. Dai**, M. Nießner, P. Kohli, P. Torr, S. Izadi, and C. Keskin. Learning to navigate the energy landscape. In *International Conference on 3D Vision (3DV)*, 2016.
- C. R. Qi, H. Su, M. Nießner, **A. Dai**, M. Yan, and L. Guibas. Volumetric and multi-view cnns for object classification on 3d data. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, IEEE, 2016.
- M. Zollhöfer, **A. Dai**, M. Innmann, C. Wu, M. Stamminger, C. Theobalt, and M. Nießner. Shading-based refinement on volumetric signed distance functions. *ACM Transactions on Graphics (TOG)*, 2015.
- Y. Li, **A. Dai**, L. Guibas, and M. Nießner. Database-assisted object retrieval for real-time 3d reconstruction. In *Computer Graphics Forum*. Wiley Online Library, 2015.
- M. Nießner, **A. Dai**, and M. Fisher. Combining inertial navigation and icp for real-time 3d surface reconstruction. In *Eurographics 2014 Short Papers*. The Eurographics Association, 2014.