

YINYU NIE

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Visual Computing Group, Department of Informatics, Technical University of Munich

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EDUCATION

Bournemouth University, U.K.

January 2017 - April 2021

PhD, Scene understanding and reconstruction, 3D shape analysis.

Thesis: “Holistic Indoor Scene Understanding, Modelling and Reconstruction from Single Images”.

National Centre for Computer Animation, Faculty of Media and Communication.

Southwest Jiaotong University, China.

September 2014 - December 2016

MEng, Vehicle system dynamics, Photo-based vehicle body modelling.

Thesis: “Data-driven simulation framework for railway vehicle dynamics”.

State Key Laboratory of Traction Power.

Southwest Jiaotong University, China.

September 2010 - June 2014

BSc, Statistics.

School of Mathematics.

RESEARCH INTERESTS

3D Computer Vision and Graphics including: **1)** 3D scene analysis, understanding and reconstruction; **2)** 3D shape analysis, representation and reconstruction; **3)** Human-scene interaction; **4)** Medical image/video analysis.

RESEARCH EXPERIENCE

Technical University of Munich, Germany

April 2021 - Present

Post-doctoral researcher with Prof. Matthias Niessner

National Centre for Computer Animation, U.K.

January 2017 - April 2021

Postgraduate researcher

Topics: Content-aware indoor scene understanding and modeling.

Supervisors: Jian Chang, Jian J Zhang.

The Chinese University of Hong Kong (Shenzhen), China

August 2019 - December 2020

Visiting PhD researcher

Topics: 3D scene understanding and reconstruction.

Project Instructor: Xiaoguang Han.

State Key Laboratory of Traction Power, China.

September 2013 - December 2016

Postgraduate researcher

Topics: Photo-based 3D modelling of train accident scenes; Data-driven vehicle dynamics simulation.

Supervisors: Jian J Zhang, Zhao Tang.

SKILLS

Proficient in deep learning / machine learning techniques in computer vision and graphics with related programming languages and tools.

Programming: Python, C/C++, HTML, L^AT_EX, Mathematica, Matlab

Tools: Pytorch, Tensorflow, Blender, OpenCV, VTK.

ACADEMIC SERVICES

Conference Reviewer: CVPR'22-23, ECCV'22, ICCV'23, NeurIPS'23, 3DV'22

Journal Reviewer: TPAMI, TVCG, CGF, ISPRS, Computers & Graphics

Program Committee Member: CASA'20 - Present

TEACHING

Teaching Assistant: Advanced Deep Learning for Computer Vision, 2021-Present, TU Munich.

SELECTED PUBLICATIONS

Tang, J., **Nie, Y.**, Markhasin, L., Dai, A., Thies, J. and Nießner, M., 2023. DiffuScene: Scene Graph Denoising Diffusion Probabilistic Model for Generative Indoor Scene Synthesis. arXiv preprint arXiv:2303.14207. (arXiv 2023 preprint)

Nie, Y., Dai, A., Han, X., Nießner, M., 2023. Learning 3D Scene Priors with 2D Supervision. (CVPR 2023)

Zhu X., Du, D., Chen, W., Zhao, Z., **Nie, Y.**, Han, X., 2023. NerVE: Neural Volumetric Edges for Parametric Edge Curve Extraction from Point Cloud. (CVPR 2023)

Rao, Y., **Nie, Y.**, Dai, A., 2022. PatchComplete: Learning Multi-Resolution Patch Priors for 3D Shape Completion on Unseen Categories. (NeurIPS 2022)

Nie, Y., Dai, A., Han, X. and Nießner, M., 2022. Pose2Room: Understanding 3D Scenes from Human Activities. (ECCV 2022)

Gong, B., **Nie, Y.**, Lin, Y., Han, X. and Yu, Y., 2021. ME-PCN: Point Completion Conditioned on Mask Emptiness. (ICCV 2021)

Zhang, J., **Nie, Y.**, Chang, J. and Zhang, J.J., 2021. Surgical Instruction Generation with Transformers. (MICCAI 2021 **Oral**)

Nie, Y., Hou, J., Han, X. and Nießner, M., 2020. Rd-Net: Point Scene Understanding by Semantic Instance Reconstruction. (CVPR 2021)

Nie, Y., Han, X., Lin, Y., Guo, S., Chang, J., Cui, S. and Zhang, J.J., 2020. Skeleton-bridged Point Completion: From Global Inference to Local Adjustment. (NeurIPS 2020)

Du, D., Zhu, H., **Nie, Y.**, Han, X., Cui, S., Yu, Y., Liu, L., 2020. Learning Part Generation and Assembly for Sketching Man-Made Objects. (Computer Graphics Forum)

Nie, Y., Han, X., Guo, S., Zheng, Y., Chang, J. and Zhang, J.J., 2020. Total3DUnderstanding: Joint Layout, Object Pose and Mesh Reconstruction for Indoor Scenes from a Single Image. arXiv preprint arXiv:2002.12212. (CVPR2020 **Oral, Paper Award nominee**)

Zhang, J., **Nie, Y.**, Lyu, Y., Li, H., Chang, J., Yang, X., Zhang, J.J., 2020. Symmetric Dilated Convolution for Surgical Gesture Recognition. arXiv preprint arXiv:2007.06373. (MICCAI 2020 **Oral, Student Award**)

Nie, Y., Guo, S., Chang, J., Han, X., Huang, J., Hu, S.M. and Zhang, J.J., 2020. Shallow2Deep: Indoor scene modeling by single image understanding. Pattern Recognition, 103, p.107271.

Nie, Y., Chang, J., Chaudhry, E., Guo, S., Smart, A. and Zhang, J.J., 2018. Semantic modeling of indoor scenes with support inference from a single photograph. Computer Animation and Virtual Worlds, 29(3-4), p.e1825. (CASA2018, **Best Paper Award**)

REFERENCES

Prof. Dr. Matthias Nießner

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Prof. Dr. Angela Dai

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Prof. Dr. Xiaoguang Han

Professor, CS, CUHK,SZ

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Prof. Dr. Jian Chang

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Prof. Dr. Jian J Zhang

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