

Pengfei Wang

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Education

Shandong University

PH.D. IN COMPUTER SCIENCE

• Advisor: Prof. Changhe Tu and Prof. Shiqing Xin

Qingdao, China

Sept. 2024 - Now

Shandong University

M.E. IN COMPUTER SCIENCE

• Advisor: Prof. Shiqing Xin

Qingdao, China

Sept. 2021 - Jun. 2024

Hunnu Normal University

B.E. IN COMMUNICATION ENGINEERING

• GPA: 3.36 / 4

Changsha, China

Sept. 2017 - Jun. 2021

Research Interests

Computational Geometry, Geometric Modeling, Distance Computation, Surface Processing

Publications

†Equal contribution. *Corresponding author.

Efficient Nearest Neighbor Search Using Dynamic Programming

[Project Page] [PDF] [Code] [DOI]

PENGFEI WANG, JIANTAO SONG, SHIQING XIN[†], SHUANGMIN CHEN, CHANGHE TU, WENPING WANG, JIAYE WANG

IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2025. (CCFA, IF:18.6)

Manifold k-NN: Accelerated k-NN Queries for Manifold Point Clouds

PENGFEI WANG, QINGHAO GUO, HAISEN ZHAO, SHIQING XIN[†], SHUANGMIN CHEN, CHANGHE TU, WENPING WANG

ACM Transactions on Graphics (Proc. SIGGRAPH), 2026. (CCFA)

Structural MAT: Clean and Scalable Medial Axis Simplification via Explicit Surface Correspondence

PENGFEI WANG, SHUANGMIN CHEN, DONGMING YAN, YING HE, SHIQING XIN[†], CHANGHE TU, WENPING WANG

ACM Transactions on Graphics (Proc. SIGGRAPH), 2026. (CCFA)

Towards Voronoi Diagrams of Surface Patches

[PDF] [DOI]

PENGFEI WANG, JIANTAO SONG, LEI WANG, SHIQING XIN[†], DONGMING YAN, SHUANGMIN CHEN, CHANGHE TU, WENPING WANG

IEEE Transactions on Visualization and Computer Graphics (TVCG), 2025. (CCFA)

Power Diagram Enhanced Adaptive Isosurface Extraction from Signed Distance Fields

[PDF]

PENGFEI WANG, ZIYANG ZHANG, WENSONG WANG, SHUANGMIN CHEN, LIN LU, SHIQING XIN[†], CHANGHE TU

IEEE Transactions on Visualization and Computer Graphics (TVCG), 2026. (CCFA)

Swept Volume Computation with Enhanced Geometric Detail Preservation

[PDF] [DOI] [Slides] [Video]

PENGFEI WANG[†], YUOXIN YANG[†], SHUANGMIN CHEN^{*}, SHIQING XIN, CHANGHE TU, WENPING WANG

Computer Graphics Forum (CGF). Presented at PG 2025. (CCFB)

Toward Precise Curve Offsetting Constrained to Parametric Surfaces

[PDF] [DOI]

JIN ZHAO[†], PENGFEI WANG[†], SHUANGMIN CHEN, JIONG GUO, SHIQING XIN^{*}, CHANGHE TU, WENPING WANG

Computer-Aided Design (CAD). Presented at SPM 2025. (CCFB)

Towards geodesic ridge curve for region-wise linear representation of geodesic distance field

[PDF] [DOI]

WEI LIU[†], PENGFEI WANG[†], SHUANGMIN CHEN^{*}, SHIQING XIN, CHANGHE TU, YING HE, WENPING WANG

Computer Aided Geometric Design (CAGD). Presented at GMP 2024. (CCFB)

Efficiently Computing Voronoi Diagrams over Mesh Surfaces with Arbitrary Distance Solvers

[PDF] [Code] [DOI]

SHIQING XIN, PENGFEI WANG, RUI XU, DONGMING YAN, SHUANGMIN CHEN^{*}, WENPING WANG, CAIMING ZHANG, CHANGHE TU

ACM Transactions on Graphics (TOG). Presented at SIGGRAPH Asia 2022. (CCFA)

Biharmonic Distance Driven Voronoi Diagrams Restricted on Curved Surfaces

[PDF] [Slides]

XUETONG ZHAO, **PENGFEI WANG**, YINING XU, SHUANGMIN CHEN, HUI LI

CAD/Graphics 2025. (CCF C)

Device defect detection based on intrinsic rotational symmetry

[PDF] [DOI]

TAO ZHOU, **PENGFEI WANG**, WEIJIE GAO

Journal of Graphics.

Voronoi diagram-based algorithm for 3D borehole modeling

[PDF] [DOI]

XINYANG HU, **PENGFEI WANG**, QIONG ZENG, PENG JIANG, SHIQING XIN, CHANGHE TU

Journal of Graphics.

Honors & Awards

ACADEMIC AWARDS

- 2024 **Best Paper Award**, 18th International Conference on Geometric Modeling and Processing
2023 **Innovation Achievement Award**, Shandong Province Graduate Student Innovation Program

Qingdao, China
Shandong, China

COMPETITION AWARDS

- 2019 **Bronze Medal**, ICPC Asia Nanjing Regional Contest
2019 **Silver Medal**, 15th Hunan Collegiate Programming Contest
2024 **Third Prize**, Chinagraph 2024 High-Precision 3D Reconstruction Competition

Nanjing, China
Hunan, China
Anhui, China

Patents

- 2024 **Automatic Measurement Method for Insulator Creepage Distance Based on 3D Scanning**,
CN202410220149.4

Pending

Presentation

Siggraph Asia 2022

Daegu, S.Korea

PRESENTER FOR <EFFICIENTLY COMPUTING VORONOI DIAGRAMS OVER MESH SURFACES WITH ARBITRARY DISTANCE SOLVERS>

Nov. 2022

- Presented a novel algorithm for computing surface Voronoi diagrams without external Voronoi/Delaunay solvers.
- Demonstrated flexibility with arbitrary distance metrics and applications in mesh generation and geometry processing.

International Conference on Geometric Design and Computing 2023

Shanghai, China

PRESENTER FOR <RESEARCH PAPER AT PREMIER CONFERENCE>

Aug. 2023

- Presented the paper *Efficiently Computing Voronoi Diagrams over Mesh Surfaces with Arbitrary Distance Solvers*.

The International Conference on Computer-Aided Design and Computer Graphics 2025

Yantai, China

PRESENTER FOR <BIHARMONIC DISTANCE DRIVEN VORONOI DIAGRAMS RESTRICTED ON CURVED SURFACES>

Sep. 2025

- Introduced biharmonic embedding-based distance metric for computing surface Voronoi diagrams on thin-plate models.
- Achieved improved partition quality and efficiency compared to geodesic and Euclidean distance-based methods.

Pacific Graphics 2025

Taiwan, China

PRESENTER FOR <SWEEP VOLUME COMPUTATION WITH ENHANCED GEOMETRIC DETAIL PRESERVATION>

Oct. 2025

- Proposed a new swept volume method using motion perspective inversion to simplify complex trajectory analysis.
- Used a multi-field representation and 4D incremental cutting to preserve fine geometric details during extraction.

Academic Activities

PEER REVIEW

- 2025 **Reviewer**, Graphical models