Xingyi Du

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EDUCATION

Washington University in St. Louis August 2018 - Present

PhD in Computer Science

Tsinghua University August 2015 – July 2018

Master of Engineering in Software Engineering

advised by Hui Zhang

- Mainly focused on geometry processing and remeshing
- GPA:3.7/4.0, Rank: **1/131**

Tsinghua University August 2011 - July 2015

Bachelor of Engineering in Materials Science and Engineering

- Minor in Computer technology
- GPA: 91/100
- Math grades: Calculus(100), Linear Algebra(96), Probability and Statistics(97), Complex Analysis(100)

RESEARCH INTERESTS

Computer graphics, Geometry processing, Geometric modeling, Optimization

RESEARCH PROJECTS

Piecewise implicit modeling 2020 - present

Advisor: Prof. Tao Ju

Collaborators: Nathan Carr, Qingnan Zhou (Adobe)

Locally injective mapping 2018 – 2020

Advisor: Prof. Tao Ju

Collaborators: Noam Aigerman, Qingnan Zhou, Danny Kauffman (Adobe)

Shahar Kovalsky (Duke Univ.), Yajie Yan (Facebook)

- Proposed a novel formulation to recover locally injective mapping from a non-injective initial mapping in the cases where the boundary is fixed. Formulate the problem in optimization framework by minimizing a smoothed version of total area.
- Create a dataset of 2D/3D meshes to test our method and related locally injective mapping methods.
- Paper “Lifting Simplices to find Injectivity” conditionally accepted to Siggraph 2020.

Remeshing via Field-aligned Centroidal Voronoi Tessellations(CVT) 2016 - 2017

Advisors: Dong-Ming Yan, Hui Zhang

- Proposed a novel isotropic remeshing approach for triangular meshes by equipping CVT energy with a penalty term that enforces alignment of mesh edges to the predefined directional field (6-RoSy field).
- Extended the approach to quad-dominant mesh generation using 4-RoSy field.
- Improved the quality of quad-dominant meshes by a topology optimization based on a novel edge-field matching algorithm.
- One paper is accepted to CAD&CG. One paper is submitted to CGF and is under review.

Interactive Quad-mesh Design using Topology Patterns 2016

Advisor: Hui Zhang

- Simplified the topology patterns in the pattern database proposed in data-driven interactive quadrangulation(DDQ) by further polychord collapse. The size of the database was reduced from 730MB to 270MB.
- Formulated a code for topology patterns which can be used to match same patterns with permutated vertex id and detect the rotation and mirror symmetry of a pattern.
- Visualized the patterns in the database and demonstrated polychord collapse/expansion by a Qt GUI program. The code is shared on GitHub.

Surface Adsorption Simulation of U-Ti Alloys 2015

Advisor: Wen-Sheng Lai

- Explored the adsorption behavior of H_2 and O_2 on the surface of U_2Ti using quantum mechanics simulation.
- Designed and implemented a framework to facilitate computation task management and experiment analysis using Linux shell script.
- Won the Outstanding Bachelor Thesis award.

PUBLICATIONS

Lifting Simplices to Find Injectivity

Xingyi Du, Noam Aigerman, Qingnan Zhou, Shahar Kovalsky, Yajie Yan, Danny Kauffman, Tao Ju

Siggraph 2020 (conditional accepted)

Field-Aligned Isotropic Surface Remeshing

Xingyi Du, Xiaohan Liu, Dong-Ming Yan, Caigui Jiang, Juntao Ye, Hui Zhang

Computer Graphics Forum, Vol 37, No 6, 2018. (presented at Eurographics 2018)

Quad Mesh Generation via Field-Aligned Centroidal Voronoi Tessellation

Xingyi Du, Dong-Ming Yan, Juntao Ye, Hui Zhang

China CAD&CG, Vol. 30, No.5, 2018. (presented in China CAD&CG 2017)

INDUSTRY EXPERIENCE

Face++ Summer 2017

Research Intern

Implemented a software for 3D face registration with morphable model. The software takes 3D data in the form of RGB-D, point clouds or reconstructed meshes. The registration process includes rigid pose alignment, model fitting to face shapes and expressions, correspondence estimation and deformation.

AWARDS

Scholarship

Glodon Graduate Scholarship (5%)

Freudenberg German Scholarship

Nissan Scholarship

Feng Bin Scholarship

Honor

Outstanding Bachelor Thesis (5 out of about 80 students)

Competition

First prize in the 21th Tsinghua German Competition (2 out of about 100 students)

Third prize in the 29th China Undergraduate Physics Competition

TEACHING

Teaching Assistant Digital Media I: Graphics and Animation Fall 2016

Teaching Assistant. CSE 546T Computational Geometry Fall 2019

SKILLS

Programming Languages: C++, Python, Mathematica, Matlab

ADDITIONAL EXPERIENCE

Team leader in 2012 summer social practice: a survey of agricultural development in Shaanxi Province

Leader of Students' Association of Community Building

Core member of Students' Association of Classics

Hackathon by Maker Space of Tsinghua: Smart Air Conditioner Team