Mingpei CANG
PhD Candidate

Academy of Interdisciplinary Studies, HKUST
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My research focuses on: System development, process optimization and in-situ monitoring of **projection stereo-lithography** 3D printing; Design and fabrication of mechanical and multi-functional **metamaterials** (mainly 3D periodic truss, plate, and shell lattice structures).

EDUCATION

The Hong Kong University of Science and Technology (HKUST), *Hong Kong, China* — Sep 2021 – Present
PhD student in Smart Manufacturing, Academy of Interdisciplinary Studies
Supervised by Dr. Huachen Cui and Prof. Michael Yu Wang
*Expected to graduate in **Aug. 2026***

The Hong Kong University of Science and Technology (Guangzhou) , *Guangzhou, China* — Sep 2023 – Present
Exchange student in Smart Manufacturing, Systems Hub

Dalian University of Technology (DUT), *Dalian, China* — Sep 2017 – Jun 2021
Bachelor of Engineering in Engineering Mechanics, Qian Lingxi Elite Program
Supervised by Prof. Yiqiang Wang
Average grade: 90.1/100, Rank: 3/33

PUBLICATION

Metallic perforated plate lattices with superior buckling strength — **Journal articles**
*L. Zhang[#] , **M. Cang**[#], J. Ding et al., Materials and Design, (2025) 113544. Featured as the cover image in issue 249.*
- Designed perforated plate lattice structures optimized for powder-based additive manufacturing.
- Found perforation locations that increase buckling eigenvalue, according to theoretical analysis and finite element method.
- Performed linear and nonlinear finite element analysis on the designed plate lattices.
- Fabricated the design with LPBF and performed quasi-static compression tests.

An efficient method for design of lattice core sandwich structures with superior buckling strength — **Journal articles**
***M. Cang**[#], L. Zhang[#], Y. Wang et al., Engineering Optimization, (2023) 1-19.*
- Unveiled the similarity of the buckling deformation modes of different lattice cores in sandwich panels.
- Designed truss lattice structures with non-uniform cross-sections optimized for buckling strength.
- Fabricated the designed structures with SLS and validated the design under compression tests.

Biocompatible piezoelectric lattice materials with ultrasound-regulated multimodal responses — **Journal articles**
*A.Chen[#] , J. Su[#], M. Zhou[#], **M. Cang** et al., Materials Science and Engineering: R: Reports, (2025) 100876.*
- Performed principle curvature analysis and visualization on CT model of a rat femoral head.
- Designed bone-mimicking lattices for scaffolds based on TPMS, which resembles curvature distribution of real bone specimens.

Process Optimization of PµSL for Assembly-Free Fabrication of Micro Transmission Mechanisms — **Poster presentation**
***M. Cang**, H. Cui, 2024 Materials Research Society (MRS) Fall Meeting,*
- Modelled the photo polymerization process with reaction-diffusion model and solve via finite difference method.
- Modelled the light scattering effect of filler particles in ceramic (e.g. Alumina) slurry.
- Optimized PµSL process to eliminate proximity effects, enabling sub-pixel sized features and assembly-free fabrication of transmission mechanisms.

#: These authors contributed equally to the work.

TECHNICAL EXPERIENCE

Graduate Teaching Assistant — **Sep 2023 — Jun 2024**
SMMG5500: Additive Manufacturing Fundamentals (instructor: Dr. Huachen Cui) — *HKUST(GZ)*
- In-person tutorials for each course assignment and term project.
- Assisted in assembling FDM 3D printers.
- Lab tutorials for demonstrating the working principle of LCD/DLP 3D printers.

Graduate Teaching Assistant — **Sep 2021 — Jan 2022**
MESF5580: Topology Optimization and Additive manufacturing (instructor: Prof. Michael Y. Wang) — *HKUST*
- Online & in-person tutorials for each assignment and term project.
- Assignment grading for 68 M.Sc. students in this course.
- Received very positive responses in course rating after the semester.

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Extracurricular Experience

Founding Director   **Sep 2023 – Now**
HKUST(GZ) Meow-meow Club (a student organization for animal protection)   *HKUST(GZ)*

- Founded the club as one of the first few student organizations in HKUST(GZ) campus.
- Organized dozens of trap-neutering-release activities for campus stray cats in 2022-23 academic year.
- Designed cat-related merchandise to be used in fundraising charity sales, which ensures club's normal operation.
- Successfully controlled the population of campus cats and ensured a peace environment for people and animals.

Assistant Director   **Sep 2021 – May 2022**
Graduate Students and Alumni Association   *HKUST*

- Help with events organizing and event photography.

Student Representative   **Sep 2021 — Apr 2022**
Amenities & Support Facilities (ASF) of Campus Readiness Committee   *HKUST(GZ)*

- Discuss major areas of concern related to campus construction and readiness
  with other ASF members on a monthly basis.

Director of Study Department, Student Union   **Jul 2019 — Jun 2020**
Department of Vehicle Engineering and Mechanics   *DUT*

- Undergraduate Academic Analysis Report of the department.
- Organized Contest of Theoretical Mechanics and Material Mechanics of DUT.

Awards

Postgraduate Studentship	Sep 2021 - Present
Outstanding graduates award of Dalian city	Jun 2021
China National Scholarship	Oct 2019

Skills

Language	Mandarin Chinese (native), English (fluent (for work), *IELTS: 7.5*)
Programming	Python, Matlab
Tools	Solid mechanics simulation [**Abaqus**, **Comsol**],
	Implicit modelling [**NTop**, **Python**],
	Explicit modelling [**Autodesk Fusion**, **Autodesk Inventor**, **FreeCAD**]
	Design and creativity [**Blender**, **Photoshop**]
Interdisciplinary Skills	**Projection stereolithography systems development**
	- Hardware + Software: Optical systems setup and printing process control
	- Material: Photosensitive resin formulation and characterization
	- Innovation: Develop novel solutions to address printing problems
	Photography
	- Background and lighting arrangement
	- Macro photography

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