

Bowen Ren

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Education

Tsinghua University

June 2021 – now

Bachelor in Mathematics

Beijing China

- Core courses: numerical analysis(3.6), convex optimization(4.0), analytic mechanics(4.0), Scientific Computing with Matlab(4.0), computer graphics(N/A), deep learning(4.0), Advanced Linear Algebra(3.6, 4.0), functional analysis(3.6).

Research Experience

Apply PINNs to Solve Navier–Stokes equations

Tsinghua University

Beijing China

- Applied Physics Informed Neural Networks (PINNs) in solving two-dimensional steady-state Navier-Stokes equations and taking several methods to improve accuracy of the solution.
- Got the third highest score in poster presentation as the course project of deep learning.

Differentiable simulation

Tsinghua University

Beijing China

- Perfected the relevant code, including the implementation of actuation and the derivative of actuation
- Derived the formulas for the distance between two triangles, as well as their derivatives and the Hessian matrix, and completed the corresponding code.
- Explored the feasibility of different implementations of Dirichlet boundary conditions in the code.
- Created differentiable examples and conducted corresponding analysis.

Neural collision field(exploring)

Tsinghua University

Beijing China

- Using a neural network to replace a traditional step in the collision resolution process, such as a difficult-to-calculate integral.
- Studying some relevant articles and replicating their results.

Selected Award

Silver Medal

Chinese Mathematical Olympiad

2020

Skills

Programming: Python, C++, Matlab, CUDA(a little)