

# Tianyu Cheng

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## EDUCATION

### UNIVERSITY OF TEXAS

#### M.S. IN COMPUTER SCIENCE

May 2017 | Austin, TX  
College of Natural Science  
Five Years BS/MS Integrated Program  
Major GPA: 3.75 / 4.0

#### B.S. IN COMPUTER SCIENCE

May 2016 | Austin, TX  
College of Natural Science  
Turing Scholars Program  
Major GPA: 3.95 / 4.0

## COURSES

### UNDERGRADUATE

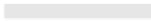
Operating System  
Algorithm & Complexity  
Artificial Intelligence  
Programming Languages  
Computer Vision/Machine Learning  
Data Mining  
Network & Privacy

### GRADUATE

Compiler  
Computer Graphics  
Autonomous Robots  
Software Design  
Advanced Operating System  
Numerical Linear Algebra

## SKILLS

### LANGUAGES

C/C++   
Java   
Python 

### INTERESTS

Graphics   
System   
Compiler   
Web 

## LINKS

Github: [tycheng](#)  
LinkedIn: [tianyu-cheng](#)  
Homepage: [tycheng.github.io](#)

## EXPERIENCE

### APPLE | GPU VALIDATION TEAM

May 2016 – August 2016 | Austin, TX

- developed an internal web front-end tool for performance visualization
- implemented and validated counters in performance model
- worked on numerics validation for GPU driver

### APPLE | GPU VALIDATION TEAM

May 2015 – August 2015 | Austin, TX

- developed an internal server-side tool with Ruby on Rails for test automation
- developed a web front-end data analysis tool for data visualization
- worked on numerics validation for GPU driver

### DIGITAL MEDIA INSTITUTE | STUDENT TECHNICIAN

June 2014 – December 2014 | Austin, TX

- back-end design and implementation for an educational game in Unity
- developed several third-party tools to facilitate game development

## PROJECTS

### PLANET RENDER | COMPUTER GRAPHICS

- a procedural terrain rendering program in OpenGL/GLSL
- procedural terrain generation based on Perlin noise
- LoD (level-of-detail) terrain/ocean rendering with CDLOD (continuous-distance LoD)

### RAY TRACER | COMPUTER GRAPHICS

- a multithreaded ray tracer based on Whitted model
- used KD-tree and SAH for ray-object intersection optimization
- supports glossiness and depth of field using distribution ray tracing

### 3D ANIMATOR | COMPUTER GRAPHICS ANIMATION

- a simple 3D animator for 3D format PMD/PMX
- implemented using OpenGL/GLSL for model rendering
- supports FK (forward kinematics) and simple IK (inverse kinematics)

### LATTE COMPILER | DEEP NEURAL NETWORK, SOURCE-TO-SOURCE

- a source-to-source compiler for deep neural network in Python-style descriptive language
- AST pattern match for parsing deep neural network architecture
- loop structure optimization with Intel MKL(BLAS) library
- data structure transformation for cache optimization

### GAMEL | SCALA DSL

- a game scripting DSL(domain-specific language) using Scala and Swing
- designed and implemented a set of syntax for basic game object creation and manipulation
- implemented a demo of the classical game Snake using GameL