Zhe Wang

Mobile : 16262513195 Email : zhe.wang@wustl.edu

Education

- **Washington University in St. Louis** Missuri, U.S.
  Ph.D. in Computer Science *August. 2018 – Present*
- **Beijing Normal University** Beijing, China
  M.S. in Computer Science and Application, Computer Graphics and Visualization *Sept. 2015 – Jun. 2018*
- **Wuhan University** Hubei, China
  B.E. in Electronic Information Engineering *Sept. 2011 – Jun. 2015*

Brief Introduction

- **Diversity in R&D experiences**
  With my expanding technology stack, my constant curiosity has triggered different approaches meeting various urgent needs from the real world. I have implemented web-based, visual-based, interactive and distributed systems contributing to Open Innovation, Software Engineering, Cultural Heritage Preservation, Space Physics, Medical Imaging.

- **Experienced ecosystems**
  Language: JavaScript, PHP, Python, Java, C#, Go, C++, C, Fortran, x86 Assembly
  Operating System: Linux(Ubuntu14.04, 16.04), Windows(Win7, Win10)
  Embedded System: Zigbee(CC2530, ZStack), Intel Galileo(Arduino, Yocto)
  Data Store: MySQL, NetworkX, Redis, MongoDB, OrientDB, Neo4j
  Graphics Interface: OpenGL, WebGL
  Version Control: Git, Perforce
  Others: Docker, Apache, Sphinx, Tor Project

Practice and Internship

- **VMware** Beijing, China
  R&D Intern, mentored by Dr. Kevin X. Song (Director) *Jan. 2015 – Jun. 2018 (Academic Breaks)*
  - **Initiated a project – Open Compass, the first explorable map of open source**:
    Proposed a method to intuitively present open-source communities based on *force-directed algorithm*.
    Developed a distributed task handler to generate the force-directed layout based on *Gephi/Java*.
    Developed an explorable viewer of large-scale vertex-based layout with *Three.js/WebGL*.
    Developed a distributed crawler, breaking Github API Rate Limit based on *Tor Project*.
    Developed a data store for open-source code and profiles based on *MongoDB* and *OrientDB*.
    Developed a middleware to drive the modules based on *Redis* and *Flask/Python*.
    Developed a visualization of geometrically distributed open-source contribution with *Three.js/WebGL*.
    online video: https://youtu.be/cR5EzjVhwyk
  - **Devised IVF, an interaction-driven format for graph visualization (U.S. Patent Pending)**:
    Enumerated how users interact with graph visualizations by generalizing use cases, like picking.
    Abstracted the interactions with the consideration of platform compatibility.
    Designed a file format to establish the visualization via a light-weight specification.
    Developed prototypes of the reader and writer to present the idea with *Three.js/WebGL*.
  - **Introduced visual analytics to Autoguru – automatic ESXi bug identification**:
    Developed visual analytics for incorporating domain knowledge in M/L models with *Three.js/WebGL*.
    Presented the messy definition of VMware bug component with *t-SNE*.
    Refactored the code(*Python*) of Autoguru by organizing data fetching, model design and application.
  - **Fixed 38 inconsistent driver supporting information over 30,000 drivers on the official website**:
    Got inside driver support info by scanning ESXi code with *Git* and *Perforce*.
    Got outside driver support info by crawling VMware Official website with *goroutine/Go*.
    Developed and deployed a daemon to identify the gap between them with *Docker*.
    Eliminated the gap by *coordinating with driver maintainers*.
  - **Contributed to vKFC – VMKernel Function Call Visualizer (Borathon Contest)**:
    Got possible call paths from kernel binary (by teammate).
    Got actual call paths when running specific test case/workload (by teammate).
    Visualized them together with *d3.js*.

- **Finished my graduate thesis – rapid development platform based on open-source codebase**:
  Developed a crawler to fetch open-source code and profile with *Go* Developed a data store of open-source code and profile based on *MongoDB* and *Neo4j*.
  Developed a code search engine based on *Google codesearch/Go*.
  Developed a web based platform based on *Martini/Go*.
- **Built PMTool, a project management tool**:
  Developed a web based platform for engineers managing their work with *Martini/Go*.

- **Key Laboratory of Digital Protection and Virtual Reality, Beijing** Beijing, China
  Research Assistant, mentored by Prof. Mingquan Zhou (Director) *Sept. 2015 – Jun. 2018*
  - **Initiated a project – Chinese Painting 3D**:
    Designed an interactive method for modeling 3D terrain from Chinese Painting.
    Designed an automatic method for simulating 3D water flow based on *Smoothed Particle Hydrodynamics*.
    Developed web-based rendering system with *Three.js/WebGL*.
    Accelerated computation of SIMD(Single Instruction Multiple Data) with *WebGL Shader*.
  - **Implemented a system to generate 3-d architectural scene layout with simulated annealing**:
    Developed an interactive 3-d modeling application based on *QT/C++*.
    Implemented the simulated annealing with a specific energy function with *Python*.
    Ren P, Wang Z, Fan Y, et al. A Rapid Modeling Method for 3D architectural scene[C]// International Conference on Cyberworlds. IEEE, 2016:9-16
  - **Research of cerebral vascular segmentation**:
    Devised a method to improve fineness of the segmentation of small veins based on *EM Algorithm* and *K-means*.
    Implemented the method with *Scikit-learn/Python*.
    Wang Z, Zhao S, et al. Cerebral Vessel Segmentation based on Adaptive Clustering Centers[C]// ChinaVR, 2017
  - **Developed a website to present Chinese Culture**:
    Stored text, profile of pictures and profile of 3-d models with *MySQL*.
    Built a search engine to access the data with *Sphinx*.
    Developed a website with *Apache* and *PHP*.

- **College of Information Science and Technology, Beijing Normal University** Beijing, China
  Teaching Assistant *Sept. 2016 – Jan. 2017*
  - **Python Practice for undergraduate students**:
    Instructed undergraduate students in practical class with *Python*.
    Corrected the homework.

- **Embedded System Contest Training, Wuhan University** Hubei, China
  Trainee *Mar. 2014 – July. 2014*
  - **Atom Eyes: immersive remote vision system**:
    Developed an embedded system to let the people see remote scene in immersive ways with *Intel Galileo*.
    Developed an indoor positioning system with *Zigbee*.

- **The Ionosphere Laboratory, Wuhan University** Hubei, China
  Research Assistant, mentored by Prof. Chen Zhou *Sept. 2012 – Jun. 2014*
  - **Visualization of Ionosphere parameters**:
    Developed a rendering system to visualize 3-d distribution of Ionosphere Characteristic Parameters with *OpenGL*.
    Improved the rendering system to be a web based volume rendering system with *WebGL Shader* (2018).
    Wang Z, Ma Q J, Shen C, et al. Research on Visualization of Characteristic Parameters of Ionosphere[J]. Applied Mechanics & Materials, 2014, 614:676-680

Presentations

- Keynote Speech, Open Compass, China Open Source Conference, Beijing, China, Oct. 2016.
- Keynote Speech, Open Compass, Open source China, open source world conference, Beijing, China, Jun. 2016.
- Contestant, 2014 Intel Cup Embedded System Design Contest, Shanghai, China, July. 2014.

Publications

- **Wang Z**, Zhao S, et al. Cerebral Vessel Segmentation based on Adaptive Clustering Centers[C]// ChinaVR, 2017.
- Ren P, Fan Y, Zhou M,**Wang Z**, Du G, Qian L. Rapid three-dimensional scene modeling by sketch retrieval and auto-arrangement[J]. Computers & Graphics, 2017, 64:26-36.
- Ren P, Zhou M, **Wang Z**, et al. A Probabilistic Model for Traditional Chinese Architecture[C]// International Conference on Virtual Reality and Visualization. IEEE, 2017:411-417.
- Ren P, **Wang Z**, Fan Y, et al. A Rapid Modeling Method for 3D Architectural Scene[C]// International Conference on Cyberworlds. IEEE Computer Society, 2016:9-16 (Best Paper Award).
- **Wang Z**, Ma Q J, Shen C, et al. Research on Visualization of Characteristic Parameters of Ionosphere[J]. Applied Mechanics & Materials, 2014, 614:676-680.

Awards

- **Excellent Report**: 3D Chinese Landscape Painting, Key lab of Digital Preservation of Cultural Heritage and Virtual Reality of Beijing, 2018.
- **Best Paper Award**: Ren P, Wang Z, Fan Y, et al. A Rapid Modeling Method for 3D Architectural Scene[C]// International Conference on Cyberworlds. IEEE, 2016:9-16.
- **First Class Scholarship** of Beijing Normal University.
- **Outstanding Graduate Thesis**: Rapid development platform based on open-source codebase, Jun. 2015.
- **Excellent Report**: Visualization of Ionosphere, National Undergraduate Innovation Foundation, 2015.
- **The 2nd Prize** of Intel Cup Undergraduate Electronic Design Contest – 2014 Embedded System Design Invitational Contest, Chinese Ministry of Education, July. 2014.
- **First Class Scholarship** of Wuhan University.