

Zhiyi Li

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INTRODUCTION:

I am a Ph.D. candidate in Department of Computer Science in Virginia Tech and expected to graduate in May 2021. I am looking for academic job.

My research work spans mainly in two areas:

- Computer science education
- Machine learning applications in agriculture area.

EDUCATION

2013 – Present

Virginia Tech, Blacksburg, VA, USA Expected graduate in May 2021

Ph.D. candidate in Department of Computer Science, GPA 3.52/4.0

Advisor: Dr. Stephen Edwards

Area of Study: Computer Science Education, Machine Learning Applications

2004 – 2007

Virginia Tech, Blacksburg, VA, USA

MS in Computer Science GPA 3.55/4.00

1999 – 2004

Georgia State University, Atlanta, GA, USA

MS in Chemistry, GPA 3.61/4.0. MS in Computer Science, GPA 3.49/4.00.

1998 – 1999

University of Southern California (USC), Los Angeles, CA, USA

Graduate study in Ph.D. program in Chemistry, GPA: 2.85/4.00

1995 – 1998

Tsinghua University, Beijing, China

Graduate study in Master program in Chemistry, GPA: 88/100

1989 – 1993

East China University of Science and Technology (ECUST), Shanghai, China

Bachelor of Engineering, Major: Chemical Engineering, GPA: 86/100

SELECTED PUBLICATIONS

Conference papers

Zhiyi Li, Stephen Edwards, Applying Recent-Performance Factors Analysis to Explore Student Effort Invested in Programming Assignments, *14th Int'l Conf on Frontiers in Education: Computer Science and Computer Engineering, FECS 2018*, July 30th-Aug 2nd, 2018, Las Vegas, Nevada, USA.

Stephen Edwards, Zhiyi Li, A Proposal to Use Gamification Systematically to Nudge Students Toward Productive Behaviors, *Koli Calling'20: Proceedings of the 20th Koli Calling International Conference on Computing Education Research*, November 2020, Pages 1–8, virtual.

Stephen Edwards, Zhiyi Li, Towards Progress Indicators for Measuring Student Programming Effort During Solution Development, *16th Koli Calling International Conference on Computing Education Research*, Nov 24th-27th, 2016, Koli, Finland.

Zhiyi Li, Stephen Edwards, Integrating Role-Playing Gamification into Programming Activities to Increase Student Engagement, *127th American Society for Engineering Education (ASEE)*, June 22th – 26th, 2020, virtual.

Stephen Edwards, Zhiyi Li: Designing Boosters and Recognition to Promote a Growth Mind-set in Programming Activities, *2019 American Society for Engineering*

Education (ASEE) Annual Conference & Exposition, June 15th, Tampa, Florida

Manuscript:

ExG-YOLO--Improve YOLO for Object Detection Corn Counting with ExG Filter – A Deep Learning Approach, *Frontier of Agronomy*, 2020 (Abstract accepted, manuscript will be submitted on Dec2020).

Programming Skill Sets

Deep learning and Computer Vision: **TensorFlow/Keras, PyTorch, Kaggle, Google Colab, Jupiter Notebook, Matlab, Object Detection, Image segmentation, alignment.**

Programming languages: Java, Python, C++/C

Source version control: **GitHub**: <https://github.com/zhiyilearn>

Web & Database: HTML/XML/CSS, Javascript, MySQL, IBM DB2, Oracle

Courses Taken in Machine Learning & Computer Vision area:

ECE5554: Introduction Computer Vision in fall, 2017

Learned basic computer vision concepts and algorithms. I implement basic algorithms such as image filtering, interest points, tracking, correspondence and alignment, single view, multiple-view geometry, grouping and recognition. We did a **face tracking** project to improve tracking human faces in a video with convolutional neural network (CNNs).

ECE 5984: Introduction Machine Learning & Perception in spring, 2015.

Grasp basic machine learning methods and concepts. These include K-nearest neighborhood (KNN), Naive Bayes, Logistic Regression, SVM, and Neural Network et al. We implemented a human **face recognition** system with SVM and Neural Network methods.

Programming Activities

Volunteer Judge for Mid-Atlantic Regional ACM Programming Contest, 2016, 17, 18, 19 in Blacksburg, VA.

Current Research Projects

Improve Feedback in automatic grading system Web-CAT with Indicators, Progress Index for Progress and Struggle status

Work with my advisor Dr. Stephen Edwards, design and implement indicators and progress Index to measure students' progress, especially struggle status in automatic grading system **Web-CAT**. Incorporate gamification elements into feedback information to provoke students' growth mindset and in programming activities. 5 papers and 2 SRCs published.

Github link: <https://github.com/web-cat/PPI-data-extractor/>

Deep learning in object detection methods to detect corns in drone images

Work with PI Dr. Song Li in School of Plants and Environmental Sciences in Virginia Tech. Apply deep Learning Model to detect corns in drone images. Improve state-of-arts Deep Learning models YOLO performance with extra ExG filter to **detect** corns in drone images.

Develop Jupyter Notebook Tutorial in Kaggle platform to detect corns in drone images with YOLO. The tutorial is already be used in VT classroom.

Github: <https://github.com/zhiyilearn/A-Tutorial-for-YOLO-Object-Detection-in-Kaggle-Platform>

Currently work on Android Apps for object detection for corn images with TFLite and YOLO.

Github: <https://github.com/zhiyilearn/TFLiteForYOLOCornImageDetection>

Awards:

2018, 2019 ACM SIGCSE Student Research Competition travel award each \$500.

VT-IBM AI in-Scale Hackthon in spring 2019, First place, \$2000, as an individual contributor with a team.

Work on project focused on a Generative adversarial network (GANS) application in mechanic engineering.

VT-IBM AI in-Scale Hackthon in fall 2019, Third place, \$200, as a lead with a team. Work to deploy Deep Learning model SSD and prediction in edge device: NVIDIA Jetson Nano Development Toolkit.

Certificate and Training

NVIDIA Deep Learning Institute (DLI) Certificate: Fundamentals of Deep Learning for Computer Vision in 03/2019

NVIDA DLI Certificate “get start with AI on Jetson Nano” in 10/2019

Attended *CSinParallel/Piedmont19* Workshop in Winston-Salem in NC June 06/2019, Link:

<https://csinparallel.org/csinparallel/workshops/Piedmont19/index.html>

WORK EXPERIENCE

Employed by School of Plant & Environmental Sciences in Virginia Tech:

Graduate Research Assistant (GRA) from May 2019 to current, work on Professor Song Li in deep learning object detection application in agriculture corn project.

Employed by Department of Computer Science in Virginia Tech:

Graduate Teaching Assistant (GTA) CS1114 in 2019; CS5525 (Data Analysis I) in 2018; CS3744 in 2018; CS5044 in 2016. Work with **Web-CAT**. Graduate Research Assistant (GRA) in fall, 2016 work with **CodeWorkout** project.

Industry:

SRI International, Education Department, Arlington, VA, USA, 06/2018 – 08/2018

Research Intern: Work on applying machine learning methods in K12 STEM education in China; Integrate Google Blockly Game code to SRI application to study students’ behavior.

IBM Software Group: Notes and Application Tools Group, Raleigh, NC, USA. 01/2006 – 08/2006

Web/Notes Database Developer (Co-op) and Tester for Web Applications.

IBM: AIM (the Application and Integration Middleware) Group, Raleigh, NC, USA. 09/2006 – 12/2006

Software Testing Engineer (Co-op) for J2EE (WebSphere) applications.

Shanghai Jinshan Petrol-Chemical Design Institute, Shanghai, P. R. China, 06/1993 – 08/1995

Assistant chemical engineer to design petrol-chemical factories and products.

Academia:

University of Virginia, Center of Public Health Genomics 05/2008 – 08/2013

Research staff for Data management and analysis work for medical research information. Work to create web-service to medical information. Work on Open Source platforms Apache/Linux/MySQL with 5 years experiences.

University of Virginia, Department of Psychiatric Medicine in 09/2007—05/2008

Database IT specialist work on clinic medical research data. Experience with MS SQL Server.