Vlas Zyrianov

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EDUCATION

University of Illinois at Urbana-Champaign 2020-2025
Ph.D. studies in Computer Science (in progress, GPA: 3.9).

Kent State University 2019-2020
BS in Computer Science, Summa Cum Laude (GPA: 3.9).

Ohio College Credit Plus Program, Kent Roosevelt Highschool 2016-2019
Dual enrolled at Kent State University and high school (GPA: 3.9).

PUBLICATIONS

Conference Papers

Zyrianov, V., Zhu, X., Wang, S., (2022) "Learning to Generate Realistic LiDAR Point Clouds", in the Proceedings of the European Conference on Computer Vision (ECCV), Tel Aviv, Israel, Oct. 23-27.

Zyrianov, V., Guarnera, D.T., Peterson, C., Sharif, B., Maletic, J.I., (2020) "Automated Recording and Semantics-Aware Replaying of High-Speed Eye Tracking and Interaction Data to Support Cognitive Studies of Software Engineering Tasks," in the Proceedings of the 36th IEEE International Conference on Software Maintenance and Evolution (ICSME), Adelaide, Australia, Sep. 27-Oct. 3, 10 pages.

- *25% Acceptance Rate*
- *Received ICSME 2020 IEEE TCSE **Distinguished Paper Award***

Zyrianov, V., Newman, C., Guarnera, D.T., Collard, M.L., Maletic, J.I., (2019) "srcPtr: A Framework for Implementing Static Pointer Analysis Approaches," in the Proceedings of the 27th IEEE International Conference on Program Comprehension (ICPC), Montreal, Canada, May 25-26, pp. 144-147.

Sharif, B., Peterson, C., Guarnera, D.T., Bryant, C., Buchanan, Z., Zyrianov, V., Maletic, J.I., (2019) "Practical Eye Tracking with iTrace," in the Proceedings of the 6th ACM International Workshop on Eye Movements in Programming (EMIP), Montreal, Canada, May 27, pp. 41-42.

Journal Papers

Zyrianov, V., Peterson, C. S., Guarnera, D. T., Behler, J., Weston, G., Sharif, B., Maletic, J. I., "Déjà Vu: Semantics-Aware Recording and Replay of High-Speed Eye Tracking and Interaction Data to Support Cognitive Studies of Software Engineering Tasks – Methodology and Analysis," Journal of Empirical Software Engineering.

Conference Presentations

Levashina, J, Hartwell, C., Campion, M. C., Campion, E., Zyrianov, V., & Campion, M. A. (2022, April). Validity and gender differences of algorithmic and human interview ratings. In J. Levashina and S. Baumgartner (Co-chairs). New Developments in Structured Interviews: From AI to Technical Interviews [Symposium]. In the 37th Annual Conference of the Society for Industrial & Organizational Psychology, Seattle, WA, April 27-30.

RESEARCH EXPERIENCE

Score-Matching Generative Modeling for LiDAR Data 2021-present
University of Illinois at Urbana-Champaign

- Worked in Dr. Shenlong Wang's lab on a project to improve realism of LiDAR input in self driving car simulators by applying a score-matching model

- Created PyTorch-based mesh raycaster that emulates LiDAR rays. Wrote KITTI-360 dataset data loading code that performs various coordinate frame transforms. Created Open3D-based data visualizations. Trained NCSNv2, ProjectedGAN, VAE, and GAN in a cluster environment. Created scripts for computing MMD and a RangeNet++ based FID score.
- Paper accepted at ECCV 2022

iTrace Eye-tracking Infrastructure 2018-2020

Kent State University

- NSF-funded project to develop "an infrastructure that combines eye tracking into integrated development environments to study software development and program comprehension," CNS 17-30181, PIs: Dr. Jonathan Maletic and Dr. Bonita Sharif.
- Developed a pipeline in C# for collecting gaze data from multiple brands of eye trackers, processing the data into a unified format, and then either writing the data out to a file in an XML format or sending it to plugins connected over TCP sockets or web sockets. Project website: http://www.i-trace.org. Research resulted in a paper at ACM EMIP'19.
- Invented a novel method of collecting environment data at high eye tracker speeds. Implemented in a tool called Déjà Vu, which used the Win32 API to capture all low-level computer interaction events and replay them (alongside gaze events) at a slower rate. Research resulted in a paper at IEEE ICSME'20.

srcPtr Pointer Analysis Tool 2016-2018

Kent State University

- Worked in Dr. Jonathan Maletic's lab (SDML) on an NSF-funded project to "enhance the srcML Infrastructure: A multi-language exploration, analysis, and manipulation framework," CNS 13-05292.
- Created srcPtr, a pointer analysis tool (Github: https://github.com/srcML/srcPtr).
- The tool uses a novel method of analysis: it parses srcML (raw code marked up with its AST), generates a simplified model of the code's execution, and runs pointer analysis algorithms on it.
- Research resulted in a paper at IEEE ICPC'19.

INDUSTRY EXPERIENCE

Software Intern (Vulkan/SPIR-V Compilers Team) May 2022-Jul 2022

Nvidia, Santa Clara, CA

Software Intern (Vulkan/SPIR-V Compilers Team) May 2021-Jul 2021

Nvidia, Santa Clara, CA

- Optimized memory allocation strategies within a shader compiler written in C++.
- Expanded stats collection framework to report detailed memory stats data (e.g., peak memory, memory pool info, etc.).
- Improved implementation of existing pool allocator and used a data-driven approach to implement policies for specific memory pools within the codebase.
- Changes were merged into codebase and improved compilation time by 8.5% on a repository of real-world shaders.

Software Engineer Jun 2020-Jul 2020

AiR Everywhere (Augmented Reality Startup), Kent, OH

- Developed internal and customer facing metrics dashboard website using Blazor, C#, and Bootstrap.
- Implemented metric endpoints in the ASP.NET Core API.

Software Engineer Intern Jan 2020-Jun 2020

AiR Everywhere (Augmented Reality Startup), Kent, OH

- Worked on a full stack augmented reality social media app, primarily focusing on developing and testing the backend API, which is written in C# using ASP.NET Core and interfaces with AWS DynamoDB.
- Added features to the frontend app (written with the Unity Game Engine) by leveraging and extending pre-existing components.
- Developed internal tool to provide administrator-level access to the API with C# WPF.

TEACHING EXPERIENCE

Graduate Teaching Assistant for CS446: Machine Learning Aug 2022-Dec 2022

University of Illinois at Urbana-Champaign

Developed assignments, managed grading process, and assisted students during office hours.

Lead Graduate Teaching Assistant for CS225: Data Structures Aug 2021-Dec 2021

University of Illinois at Urbana-Champaign

Gave weekly lecture to a lab of 191 students; managed 2 graduate Teaching Assistants and 4 undergraduate Course Assistants during the lab; responded to questions on online forum; and assisted in debugging during office hours.

Graduate Teaching Assistant for CS225: Data Structures Aug 2020-May 2021

University of Illinois at Urbana-Champaign

Gave weekly lecture and organized student group-work during labs (Fall Semester: 1 lab with 17 students; Spring Semester: 2 labs with 29 and 45 students); managed undergraduate Course Assistants during labs; responded to questions on online forum; and assisted in debugging during office hours.

Substitute Lecturer for CS II Data Structures & Abstraction (CS23001) September 30, 2019

Kent State University

Gave one lecture on dynamic memory and RAII in C++ to a class of 70 students.

CS II Lab Instructor Assistant Jan 2018-May 2018

Kent State University

Assistant for once-a-week lab during the spring term. Presented materials, graded student work, and responded to student questions.

Substitute for CS II Lab Instructor October 6, 2016

Kent State University

Gave one talk on pointers and answered questions.

AWARDS, SCHOLARSHIPS, AND FUNDING

2019-2020 Kent State University Honors and Trustee Scholarships

National Science Foundation Research Experience for Undergraduates (REU, CNS 13-05292) Summer 2019–Fall 2019

National Science Foundation Research Experience for Undergraduates (REU, CNS 13-05292) Fall 2018–Spring 2019

3rd place solo at the 2018 MLH Kent Hack Enough Hackathon

1st place at the 2017 Kent State Undergraduate Research Symposium in the Computer Science / Math category

Kent State University Summer Undergraduate Research Experience Stipend 2017

SERVICE

Student Volunteering

IEEE 35th International Conference on Software Maintenance & Evolution 2019 (ICSME'19), Cleveland, Ohio

Clubs
Vice President of the Kent State University College Credit Plus Student Organization, Kent, Ohio

Ad Hoc Reviewer
ACM Symposium on Eye Tracking Research & Applications (ETRA'19)
IEEE 34th International Conference on Software Maintenance & Evolution (ICSME'18)
IEEE 33rd International Conference on Software Maintenance & Evolution (ICSME'17)

COURSEWORK

University of Illinois at Urbana-Champaign

CS543	Computer Vision
CS445	Computational Photography
CS598PS	Machine Learning for Signal Processing
CS446	Machine Learning
CS526	Advanced Compiler Construction
CS598SHW	Advanced Topics in Robot Perception
STAT400	Statistics and Probability I

SKILLS

Programming Languages
C#, C++, Python, Javascript, HTML, CSS, SQL, x86

Libraries / Systems
ASP.NET, STL, Win32, Flask, DynamoDB, MongoDB, Google Cloud Platform, VueJS, Bootstrap, Blazor, LLVM, OpenGL, Numpy, PyTorch, Open3D

PERSONAL SOFTWARE PROJECTS

Bukva 2018

- Tool to let user type in any language; Performs real-time transliteration between any two language writing systems based on a customizable config file (currently supports English to Russian, Greek, Uzbek, and Kyrgyz).
- Written in C# and utilizes the WinAPI.
- Available to download at: www.bukva-translit.com

LANGUAGES

English	Native
Russian	Native
Chinese	Beginner