Katherine Philip

— kphilip@pdx.edu | atsuzaki.com —

ABSTRACT

PhD student in programming languages, currently focused in the design and implementation of Habit programming language, a pure functional language for secure systems development. Other interests (and/or past jobs) includes IDE and developer tools, OS development, game engine development, full-stack web development, Rust, etc. In my spare time, I like to experiment with rendering engines, particularly with wgpu and Vulkan.

EDUCATION

PORTLAND STATE UNIVERSITY

PhD in progress, Computer Science, 2021 – now
- GPA: 4.0/4.0
- Working on language design, compiler frontend & backend of the Habit programming language. Advised by Mark P. Jones

SURYA UNIVERSITY

B.Sc., Human Computer Interaction, 2015 – 2019
- GPA: 3.56/4.0 (#1 in graduating class)
- Thesis: Design and Implementation of Entity Component System Architecture for Game Development in Godot.
- Awardee of Surya University's Dean's List 2017 and 2018.

RESEARCH EXPERIENCE

PORTLAND STATE UNIVERSITY

Graduate Researcher. PI: Mark P. Jones
- Designing new features for the Habit programming language, in particular: constructs enabling index-oriented programming and quality of life features for low-level programming.
- Implementing compiler optimizations in mil-tools suite, the backend compiler for translating LC (Habit's target intermediate representation) to LLVM.
- Investigating and formalizing representation transformations techniques for efficient data representations.

SURYA UNIVERSITY

Summer Undergraduate Researcher. PI: Fransiskus X. Ivan
- Explored different algorithms and techniques for de novo genome assembly
- Developed course material for Bioinformatics as a part of the research

TEACHING

AT PORTLAND STATE UNIVERSITY:
- CS320, Principles of Programming Languages, Spring 2022, TA
- CS410/510 Code Revision & Review, Winter 2022, TA
- CS410/510 Code Reading & Review, Fall 2021, TA
- CS410/510 Rust Programming, Spring 2021, TA
- CS410/510 Intro to Web Development, Summer 2021, TA

AT SURYA UNIVERSITY:
• Game Middleware, Spring 2017, TA

WORK EXPERIENCE

KODEFOX, INC.
US-based web and mobile app development house.
Software Engineer - Rust Lead, Apr 2019 – Mar 2021

• Pioneered and led the Rust adoption initiative—explored the language and its ecosystem for full stack web development and WebAssembly target platform.
• Developed a Rust training curriculum for KodeFox's employee onboarding bootcamp. Produced text and video learning materials and taught classes to old and new employees.
• Led projects using Rust web technologies such as actix-web, Rocket and Diesel for back end development.

Full stack engineer, June 2018 – Apr 2019

• Collaborated closely with team members—both in-house engineers and remote contractors—to develop web and mobile applications in React and React Native.
• Designed and maintained scalable back end technologies in Node.js and .NET, serving APIs with REST and GraphQL.
• Deployed web and mobile applications including Sampoerna ComDash, a data analytics platform, ElitePro, a customer service/sales management platform, Tallio Talent Assist, an employee management service for healthcare professionals, Tokenomy, a bitcoin exchange platform, and Unloan, a home loan refinancing app.

LOSOTROS STUDIOS, LLC.
Studio developing a HTML5 social MMO Snicksnack.
Sr. Engine Programmer, Sep 2020 – Jan 2021

• Redesigned and optimized core React-Phaser engine, eliminating race conditions and achieving 50% speedups.
• Architected a client-side multiplayer networking framework on top of Socket.IO.
• Implemented new animation pipeline to support robust outfit swapping and context-based animations.
• Collaborated with the team to design and implement backend and frontend components, minigames and core gameplay features, interfacing with AWS S3 and RDS.

MINTSPHERE
PC and console game development studio.
Generalist Intern, Jan 2018 – Apr 2018

• Designed and developed multiple small games in Unity3D and C# for an upcoming educational project (NDA).
• Assisted with in-company training of game development technologies such as Spine, Unity3D and GraphicsGale.
• Illustrated art assets for MINTSPHERE's flagship game, "Project Phantom".

MATATA, CORP.
UK-based mobile and educational game development studio.
Game Programmer Intern, Jan 2017 – Mar 2017

• Developed a mobile 3D game "Perpus" for Matata Studio's PR showcase event, and presented it in front of press and investors.
• Collaboratively planned and developed VR/AR tooling for game development in Unity3D.
• Worked closely with teams on different games and software projects, assisting each other throughout the development process.

FREELANCE ARTIST
Jan 2015 - present

- Producing high-quality artwork, ranging from promotional artworks, concept art, illustrations, game art, and comics for various personal and commercial clients.
- Most notable experience as concept artist and generalist artist for Renaine, a video game exhibited at Tokyo Game Show 2018 and will be released on Steam and Nintendo Switch in 2020.