




Baber Rehman

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SUMMARY

I wish to play the leading role in the well-being of the humanity. Love to explore what's happening in the box instead of seeing things as a black box. Have a quality to work and adjust in dynamic environments.

ACADEMICS

- 2018 - present PhD in Computer Science at **University of Hong Kong**, Hong Kong
 Research Area: Programming Languages, Type Systems,
 Functional Programming, Object-oriented Programming
 Supervisor: [Dr. Bruno C. d. S. Oliveira](#)
- 2011 - 2015 Bachelor's Degree at **University of Punjab**, Lahore, Pakistan (CGPA: 3.81/4.0)
 Major: Computer Science

RESEARCH SUMMARY

Programming languages define the constructs to instruct the machines. Various programming languages paradigms provide disparate styles of talking to the machines, such as imperative programming and functional programming. It has become essential with the growing need of technological transformation and pressing automation to design user-oriented, accessible, and robust programming languages. The more errors a programming language captures before compilation, the robust the program is. Such a language provides some static guarantees that the programs may not terminate abnormally at runtime. The study of type systems is an area of practical research interest to build robust programs. This is reflected by the fact that *a sound type system guarantees the absence of certain (abnormal) program behaviors*.

My current research revolves around type systems. Specifically, I am working on the integration of intersection types and union types. Intersection and union types are powerful features available in many modern programming languages such as Scala, Typescript, and Ceylon. The adequacy of intersection and union types lies in the fact that they naturally are able to encode various advance programming constructs, for example, function overloading, multiple interface inheritance, and nested composition.

RELATED EXPERIENCE

- Resident Tutor (part-time)** Sep 2019 - present
New College, The University of Hong Kong
- Duties include to maintain a lively environment for the students and assist them where needed, both academically and socially. Main ethos of New College includes to produce responsible citizens of the world.
 - Responsible for the photography team, web team, and news and media team

Software Engineer (DevOps)

May 2017 - Aug 2018

CloudPlex PVT LTD, Lahore, Pakistan

- Build a cloud platform to automate cloud orchestration and deployment
- Worked with AWS and Azure cloud services including VPC, S3, EC2, VNet
- Worked on automating the configuration of firewalls (PfSense and Fortinet)
- Lead one local team in Lahore and one remote team located in Argentina
- Conducted technical interviews of candidates for the backend team
- Held meetings with clients for requirement gathering, demos, and delivery
- Tools and technologies: Golang, Chef, Ansible, Networking, Docker, Shell scripting, Cloud Computing

Intern

Jul 2014 - Sep 2014

Mentor Graphics, Lahore, Pakistan

- Worked in Java programming language and used eclipse as a tool
- Explored Java GUI library i.e. SWT
- Did debugging of source code of Sourcery Codebench (an eclipse based IDE used in Mentor Graphics) and removed few of its GUI bugs

TECHNICAL SKILLS

Functional Programming	Coq Theorem Prover / Gallina
Golang	Amazon Web Service (EC2, VPC, S3, RDS)
Scala	Microsoft Azure (VNet, Virtual Machines)
Haskell	Computer Networking / VPC / VPN / PfSense
Chef / Ansible	Jenkins / Git

COMMUNITY SERVICE

- ❖ Artifact Evaluation Committee ATC 2023
- ❖ Artifact Evaluation Committee OSDI 2023
- ❖ Artifact Evaluation Committee ECOOP 2023
- ❖ Extended Review Committee ECOOP 2023
- ❖ Artifact Evaluation Committee POPL 2023
- ❖ Artifact Evaluation Committee APLAS 2022
- ❖ Artifact Evaluation Committee ECOOP 2022
- ❖ Extended Review Committee ECOOP 2022
- ❖ Student Helper PLDI 2021

PUBLICATIONS

- Baber Rehman and Bruno C. d. S. Oliveira. 2023 (In Submission). “Type Soundness with Unrestricted Merges”. In *Journal of Functional Programming (JFP)*.
- Baber Rehman. 2023. “Correctness-by-Construction meets Refinement Types”. In *24th Workshop on Formal Techniques for Java-like Programs (FTfJP)*.

- Baber Rehman, Xuejing Huang, Ningning Xie and Bruno C. d. S. Oliveira. 2022. “Union Types with Disjoint Switches”. In *European Conference on Object-Oriented Programming (ECOOP)*.
 - Baber Rehman, Xuejing Huang, Ningning Xie and Bruno C. d. S. Oliveira. 2022. “Union Types with Disjoint Switches (Artifact)”. In *European Conference on Object-Oriented Programming (ECOOP)*.
- Bruno C. d. S. Oliveira, Cui Shaobo and Baber Rehman. 2020. “The Duality of Subtyping”. In *European Conference on Object-Oriented Programming (ECOOP)*.
 - Bruno C. d. S. Oliveira, Cui Shaobo and Baber Rehman. 2020. “The Duality of Subtyping (Artifact)”. In *European Conference on Object-Oriented Programming (ECOOP)*.