



## ΟΜΙΛΙΑ

### “Scaling out Shell Programs, Automatically”



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#### ΠΕΡΙΛΗΨΗ – ABSTRACT

Unix / Linux shell programming is ubiquitous, partly due to the simplicity in which it allows combining opaque third-party components (commands) written in any programming language. Unfortunately, this language-agnostic, opaque composition hinders automated scale-out of shell programs, often forcing developers that deal with massive datasets to manually rewrite these programs in languages or frameworks designed to scale. In this talk, I will present a series of systems automatically and correctly scaling out such programs. These systems combine just-in-time compilation, partial command specification ensuring correctness, and high-performance runtime primitives that support the execution of parallel and distributed programs. Combined, they achieve order-of-magnitude speedups on completely unmodified programs, all while remaining virtually indistinguishable from (and requiring no modifications to) an underlying shell interpreter like Bash. These systems are developed by several institutions, have received multiple awards, and are available as open-source software by the Linux Foundation.

#### *Short Bio:*

**Nikos Vasilakis** is an Assistant Professor of Computer Science at Brown University, where he leads the ATLAS group, and an Affiliate with Brown's Data Science Institute and Athena's Archimedes Research Unit on AI and Data Science. His research includes software systems, programming languages, and computer security—and has been recognized by a Google Junior Faculty Award, an Amazon Research Award, and multiple best-paper awards. His current focus is on automatically transforming systems to add new capabilities such as scalable distribution, reactivity, and security against a variety of threat models. More: <https://nikos.vasilak.is/>.

**Δευτέρα 6 Οκτωβρίου 2025**

**12:00 -13:00**

**Αίθουσα Σεμιναρίων**