Nanoservice Infrastructure Notation (NINo) and the ASPIRE Interns

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Abstract

NINo is a future DevOps / Data Science pipeline tool that is being developed by JHU APL and two ASPIRE interns. The goal of this capability is to expose function-level capabilities, via either a simple application or configuration file, for use in Docker [1], Serverless Architectures [2], or data science/analytic pipelines. The goal is similar to efforts such as Metaparticle [3] and Source-to-Image[4] that aim to lower the barrier to horizontal scaling of data processing and analysis capabilities. In previous years ASPIRE interns have developed tools to ease the acceptance of DevOps principles in JHU APL. They have created a web application, Harmonia, that asked users a few simple questions and supplied the scaffolding for a software project with artifacts to support sound software engineering processes. The lack of user interest has driven us to a more focused objective. NINo will focus on easing deployment to cloud environments. Ideally, any person could develop cloud-based data science services. The team and its work has been organized in an asynchronous and agile manner. There have been three members working on three subsystems: configuration, framework/integration, and artifact generation. An incremental and prototype-driven approach has allowed for creation of increasingly more functional software as internship has proceeded. Interns have been given extensive control over their development processes and have investigated the programming frameworks used. While the initial stages have not resulted in a complete system, the interns have improved their programming skills and complete common coding challenges. The team is close to integration testing and initial demonstration. As the academic year closes, team members will work on design improvement, refactoring, and generation of future feature requests from prospective users. One summer intern will focus on developing a user interface for configuring and observing results.

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