**Research Statement**

* **Distributed System Security:** Large scale systems typically adopt distributed architecture, such as n-tier systems for Web applications. Due to complex dependency among the distributed nodes, there exists potential performance issue enigmas with hard traceability. We dig into those performance vulnerabilities ([VSI-DDoS Attacks](https://monadyn.github.io/) and [Tail Attacks](https://monadyn.github.io/)) to motivate Web services of fast responsiveness.
* **Security in Cloud Computing:** Cloud Elasticity (e.g., Amazon EC2) provides opportunity of auto-scaling computing resources for dynamical user requirements. However, performance interference due to resource contentions among co-located VMs block the promotion of Cloud computing. We investigate those performance vulnerabilities inside the cloud to protect cloud services of fast responsiveness.
* **Virtual Cluster Management:** With the wide adoption of Cloud Computing for today's enterprise and research institution, the end-users expect the out-of-box applications. [SIMULOCEAN](http://xsede.simulocean.org/about) is a web-based computing platform for scientific applications on Container technology, such as Docker, Singunarity. Those contained applications can run in multi-cloud environments (PEARC'17, [Gateways'16](https://figshare.com/articles/management_and_deployment_of_scientific_applications_with_simulocean_science_gateway/4522631)), such as Private Cloud, Public Cloud Amazon ECS, HPC Cloud [XSEDE](https://www.xsede.org/).