**I.G. Hiranya K. Jayathilaka**

**6510 El Colegio Road, Box 1122**

**Santa Barbara, CA, USA**

**Phone: +1 (805) 895-7443**

**E-mail:** [**hiranya@cs.ucsb.edu**](mailto:hiranya@cs.ucsb.edu)

# Personal Details

* Name in Full : Iyagalle Gedara Hiranya Kasub Jayathilaka
* Name with Initials : I.G.H.K. Jayathilaka
* Date of Birth : 8th October 1985
* Gender : Male
* Civil Status : Single
* Nationality : Sri Lankan

# Educational qualifications

Graduate Education

* Currently a 4th year Ph.D. student at University of California, Santa Barbara.
* Major: Computer Science
* Ascension to candidacy: Summer, 2013
* Overall GPA: 4.0 (out of 4.0)

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| --- | --- |
| **Subject** | **Grade** |
| CS 271: Advanced Distributed Systems | A |
| CS 276: Computer Networks | A |
| CS 274: Database Systems | A+ |
| CS 240A: Parallel Computing | A+ |
| CS 220: Theory of Computing and Complexity | A+ |
| CS 263: Modular Programming Languages | A |
| CS 290B: Scalable Internet Services | A |
| CS 290B: Cloud Computing | A |
| CS 290B: Cloud Computing II | A |

Undergraduate Education

* Successfully completed a B.Sc. Engineering (Hons.) degree at University of Moratuwa (<http://uom.lk>), Sri Lanka.
  + Enrollment period: February 2005 – April 2009
  + Major: Computer Science
  + Career GPA: 4.06 (out of 4.2)

# Recent projects and research

* Cerebro: Early assessment of web service performance based on static analysis and simulations (Supervised by prof. Chandra Krintz and prof. Rich Wolski):

*Goal of this project is to design algorithms and tools that employ static analysis and simulation methods to predict the performance of cloud-hosted web services. This enables developers to analyze and reason about the kind of performance that can be expected from services deployed in the cloud, and the SLAs they can uphold, before the services are actually deployed in the cloud.*

* EAGER: Enforced API Governance Engine for REST (Supervised by prof. Chandra Krintz and prof. Rich Wolski):

*EAGER is a model and an architecture that augments existing PaaS clouds to facilitate API governance as a cloud-native feature. It enables versioning, lifecycle management, backwards-compatibility retention, dependency management and governance policy enforcement on web APIs deployed in clouds. Empirical results show that EAGER scales to thousands of APIs, thousands of policies and hundreds of API dependencies per application (publication pending).*

* Automated estimation of porting effort among web APIs (Supervised by prof. Chandra Krintz and prof. Rich Wolski):

*Designed a formal model and an algorithm for computing the effort required to port an application from one web API to another. Implemented a prototype of the system in Python and evaluated against an array of real-world web APIs. Algorithm is based on the semantic similarity of web APIs and uses axiomatic semantics, Dice-coefficient-based code similarity metrics and Hoare’s consequence rule.*

* MPI2BSP (Supervised by prof. Tao Yang):

*Explored the ways for adapting older parallel computing standards to modern day computing paradigms such as cloud computing (PaaS) with minimal performance degradation. Implemented a prototype system that enables executing unmodified MPI programs over Hadoop using BSP as a bridging model.*

* Wrench (Supervised by prof. Amr El Abbadi):

*A simple replicated database featuring distributed consensus (Paxos), leader election, fault-tolerance and cross-data center transactions.*

* Hawkeye (Supervised by prof. Chandra Krintz):

*Automated API fidelity test framework for AppScale. Extensible testbed for validating the API support in AppScale for a wide range of Google App Engine APIs.*

* MDCC (Supervised by prof. Divyakant Agrawal):

*A replicated key-value store based on the MDCC (Multi-Data Center Consistency) protocol featuring Fast Paxos, sharding and atomic cross-data center transactions. Performance evaluations carried out using the YCSB benchmark over a deployment spanning over three data centers.*

* AppsCake (Supervised by prof. Chandra Krintz)

*A web service that automates the task of deploying a PaaS cloud (based on AppScale) over a given computing infrastructure. Enables automatically deploying AppScale in a number of environments including Xen, EC2 and Eucalyptus.*

# Publications

* **Service Level Agreement Durability for Web Service Response Time.** *IEEE Conference on Cloud Computing Technology and Science (CloudCom ’15).*
* **Response Time Service Level Agreements for Cloud-hosted Web Applications.** *2015 ACM Symposium on Cloud Computing (SOCC ’15).*
* **EAGER: Deployment-time API Governance for Modern PaaS Clouds.** *2015 IEEE International Conference on Cloud Engineering (IC2E ’15).*
* **Using Syntactic and Semantic Similarity of Web APIs to Estimate Porting Effort.** *In International Journal of Services Computing, Vol. 2, No. 4, Oct-Dec 2014.*
* **Service-driven Computing with APIs: Concepts, Frameworks and Emerging Trends**. In *Handbook of Research on Architectural Trends in Service-Driven Computing (2014)*, IGI Global.
* **Towards Automatically Estimating Porting Effort Between Web Service APIs**. In Proceedings of *11th IEEE International Conference on Services Computing (SCC ’14)*, Anchorage, Alaska, USA.
* **Cloud Platform Support for API Governance**. 2014 *IEEE International Conference on Cloud Engineering (IC2E ’14)*.
* **Extending Modern PaaS Clouds with BSP to Execute Legacy MPI Applications**. In Proceedings of *2013 ACM Symposium on Cloud Computing (SOCC ’13)*, Santa Clara, USA.
* **Improved Server Architecture for Highly Efficient Message Mediation**. In Proceedings of *15th* *International Conference on Information Integration and Web-based Applications & Services (iiWAS ’13)*, Vienna, Austria.

# work experience

* Software Engineering intern at **Google**, Mountain View, California.
  + Enrollment period: June 2015 – September 2015 (Ongoing)
    - Projects: Working with the Google Earth Engine team. Earth Engine is a PaaS cloud for analyzing large collections of satellite imagery, sensor data and geospatial records.
  + Enrollment period: July 2014 – September 2014
    - Projects: Worked with the Kernel-SRE (Site Reliability Engineering) team on developing systems for better management and risk analysis of the Google machine fleet.
* 3 years of professional working experience at **WSO2 Inc** (http://wso2.com).
  + Enrollment period
    - April 2009 – April 2010: Software Engineer
    - April 2010 – April 2011: Senior Software Engineer
    - April 2011 – April 2012: Associate Technical Lead
    - April 2012 – August 2012: Senior Technical Lead
  + Duties: Software design and implementation, Project management and leadership, Technical support and consulting.
  + Projects: WSO2 Enterprise Service Bus, WSO2 API Manager, WSO2 Carbon.
* Visiting lecturer at the **Department of Computer Science & Engineering at University of Moratuwa**, Sri Lanka.
  + Enrollment period: January 2012 – August 2012
  + Subjects instructed: Operating Systems
* Software Engineering intern at **WSO2 Inc**.
  + Enrollment period: October 2007 – March 2008
  + Projects: Web Services Interop Portal, Finance messaging support for WSO2 Enterprise Service Bus.

# Other professional qualifications and engagements

* Committer and project management committee (PMC) member for Apache Software Foundation (<http://apache.org>).
  + Committer ID: hiranya
  + Projects: Synapse (PMC Chair), Xerces2/J (Committer), Axis2 (Committer)
  + Also contributed to: Apache Web Services, Derby
* Committer for AppScale, open source Google App Engine clone (<https://github.com/AppScale>).
* Google Summer of Code student participant
  + 2008 – Implementing XML schema type alternatives for Apache Xerces2/J
  + 2009 – Implementing dependency management for Apache Derby dblook
* Google Summer of Code mentor
  + 2010 – Implementing message stores and processors for Apache Synapse
  + 2011 – Implementing automated integration test platform for Apache Synapse
* Conference presentations
  + Introduction to Apache Synapse – Apache Asia Road Show 2010
  + ESB: The Swiss army knife of SOA – WSO2Con 2011
    - <http://www.youtube.com/watch?v=gywzCsQJL6g>
  + High volume Web API management with WSO2 ESB – WSO2Con 2011 (Co-presented with Paul Fremantle)
    - <http://www.youtube.com/watch?v=sRSmyIc40Qc>

# Extra Curricular Activities

* Member and VP-Membership of Santa Barbara Woodland Toastmasters club (2014-present).
* Organizing committee member of the annual Graduate Student Workshop in Computing (GSWC 2014), organized by the department of Computer Science at UC Santa Barbara.
* Member of the Colombo Smedley Toastmasters club (2010-2012).
* Founding member of JAVA Colombo, the largest Java user group in Sri Lanka (2012).
* Member and vice president of the Rotaract club of University of Moratuwa (2005-2009).
* Member of the Gavel club of University of Moratuwa (2005-2007).