Stefania Victoria Costache

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Cloud Computing and Data Analytics Professional

Innovative, growth-minded professional with firm research skills in the areas of distributed systems and cloud compute resource optimization; interested in big data analytics and machine learning.

I am a highly motivated, self-starter with a solid background in distributed systems and exposure to data science tools, machine learning and data mining concepts, seeking to secure a role at a team-oriented, dynamic company. I have a proven track record of making significant and self-directed contributions to large and challenging projects. I possess an entrepreneurial and international mindset along with strong analytical, writing, interpersonal, and organizational skills. Additional languages include French and Romanian. ***Areas of expertise include:***

- Agile & DevOps Methodologies
- Cloud Computing
- Container Orchestration
- Distributed Systems
- Open Source Technologies
- Programming Skills
- Algorithm Design
- Machine Learning
- Big Data Solutions

Technical Proficiencies

Programming Languages/Technologies: C, C++, Java, Golang, Python, Scala. Familiar with Ansible, MySQL, Shell, & Jupyter Notebook.

Cloud Platform: Kubernetes, Mesos, Docker, Spark; Familiar with IBM Cloud, Google Cloud, AWS, Microsoft Azure, OpenStack, Hadoop, NoSQL Datastores, and Flink, Pytorch, Tensorflow.

Professional Experience

Freelancer, Sweden
Self-employed (January 2019 – Present)
Leverage machine learning and data mining techniques to lead the successful development and implementation of projects related to Cloud and Machine learning technologies.

- Deployed a ML pipeline on Kubernetes and GCP.
- Predicted performance using deep neural networks.

IBM (T.J. Watson Research Center), New York, NY
Research Staff (January 2016 – November 2018)
Executed a range of tasks focused on container clouds, scheduling, resource orchestration, and data analysis. Designed proof of concept prototypes, including custom controllers and schedulers, that were used to identify new technical challenges; these prototypes were adapted for internal business use and were extended in open source contributions.

- Increased efficiency of the cloud infrastructure for serverless data analytics and deep learning workloads by designing and implementing solutions that use spot market concepts to manage resources.
- Designed scalability experiments and experimented with container orchestration frameworks, such as Mesos and Kubernetes.
- Conducted Machine Learning investigations to estimate workload performance and scheduling requirements.
- Collaborated with professionals to shape patents.

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Chalmers University of Technology, Sweden

Postdoctoral Researcher (September 2015 – December 2015)

Conducted an experimental case study for intelligent vehicular systems that outlined the advantages and limitations of the different streaming technology stacks.

- Utilized intelligent vehicular systems to investigate the performance of the stream processing frameworks, Spark and Flink.
- Published a poster showing the performance comparison using a popular IoT benchmark.

Vrije University Amsterdam, The Netherlands

Postdoctoral Researcher (February 2014 – August 2015)

Worked on several projects, including (1) the analysis of the scalability of cloud stacks, (2) the development of algorithms for profiling energy consumption; and (3) elasticity of in-memory datastore for scientific data-intensive workflows. Co-advised 3 graduate students and motivated them to successfully complete their projects by helping them brainstorm and draft research papers.

- Increased scheduling performance and minimized resource waste by developing an online scheduler for scientific data-intensive workflows.
- Prototyped algorithms and implemented a multi-cloud provisioning policy simulator that revealed hosting cost reductions for PaaS providers.
- Co-authored several conference and journal papers.
- Strengthened student research capabilities by developing code.

INRIA Rennes-Bretagne Atlantique, France

Research Engineer (September 2013 – January 2014)

Designed and conducted scalability experiments of a Cloud-based middleware software which interfaced with multiple infrastructure clouds. Experiments revealed that middleware brings low performance overheads for a typical application deployment while also decreasing configuration overheads for users.

EDF R&D/INRIA Rennes-Bretagne Atlantique, France

Research Engineer (May 2010 – July 2013)

Prioritized and scaled application resources by using spot market and virtual economy concepts to design a resource management framework for running HPC applications, such as batch MPI and task farming, on a private cloud.

- Maximized infrastructure utilization by proposing SLO-driven scaling policies for vertical and horizontal resource allocation; this proposal allowed more users to run applications simultaneously.
- Reduced the number of virtual machine migrations below a threshold and decreased resource management performance overheads by developing an incremental placement algorithm for virtual machines.
- Recognized by the French academic community for submitting the best paper on Cloud Computing at the 2014 annual ComPAS meeting.

Teaching Experience

Vrije University Amsterdam, The Netherlands

Lecturer, Advanced Topics in Distributed Systems (Fall 2014)

Teaching Assistant, Performance of Networked Systems (Spring 2014 & 2015)

"Politehnica" University of Bucharest, Romania

Teaching Assistant, Computer Graphics (Fall 2008)

Teaching Assistant, Graphic Processing Systems (Fall 2008)

Teaching Assistant, Operating Systems (Fall 2007)

Education

Ph.D., Computer Science, 2013
University of Rennes 1, France
PhD Thesis title: "Market-based autonomous resource and application management in the cloud"

Master of Computer Science, Automatic Control and Computers Faculty, 2010
University "Politehnica" of Bucharest, Bucharest, Romania
Thesis Title: "Towards highly available and self-healing grid services"

Bachelor of Engineering, 2008
University "Politehnica" of Bucharest, Bucharest, Romania
Thesis Title: "Multiscaling algorithms for molecular dynamics simulations with GROMACS"

Internships

INRIA Rennes-Bretagne Atlantique, France, Intern in the Myriads Group, May 2009 – October 2009

University of Groningen, The Netherlands, Intern in the Molecular Dynamics Group, February 2009 – March 2009 and March 2008 – July 2008

Publications

1. Resource Management in Cloud Platform as a Service Systems: Analysis and Opportunities. Stefania Costache, Djawida Dib, Nikos Parlavantzas, Christine Morin. Journal of Systems and Software, Elsevier, 2017.
2. MemEFS: A network-aware elastic in-memory runtime distributed file system. Alexandru Uta, Ove Danner, Cas van der Weegen, Ana-Maria Oprescu, Andreea Sandu, Stefania Costache, Thilo Kielmann. Future Generation Computer Systems, Elsevier, 2017.
3. Market-based autonomous resource and application management in private clouds. Stefania Costache, Samuel Kortas, Christine Morin, Nikos Parlavantzas. Journal of Parallel and Distributed Computing, 2016.
4. Understanding the data-processing challenges in Intelligent Vehicular Systems. Stefania Costache, Vincenzo Gulisano, Marina Papatriantafilou. Intelligent Vehicles Symposium (IV), 2016.
5. E-BaTS: Energy-Aware Scheduling for Bag-of-Task Applications in HPC Clusters. Alexandra Vintila-Filip, Ana-Maria Oprescu, Stefania Costache, Thilo Kielmann. Parallel Processing Letters, 2015.
6. MemEFS: an elastic in-memory runtime file system for escience applications. Alexandru Uta, Andreea Sandu, Stefania Costache, Thilo Kielmann. e-Science, 2015.
7. Scaling vm deployment in an open source cloud stack. Kaveh Razavi, Stefania Costache, Andrea Gardiman, Kees Verstoep, Thilo Kielmann. Proceedings of the 6th Workshop on Scientific Cloud Computing, 2015.
8. Merkat: A Market-based SLO-driven Cloud Platform. Stefania Victoria Costache; Nikos Parlavantzas; Christine Morin; Samuel Kortas. CloudCom, 2013.
9. On the Use of a Proportional-Share Market for Application SLO Support in Clouds. Stefania Victoria Costache; Nikos Parlavantzas; Christine Morin; Samuel Kortas. EuroPar, 2013 (26.8%).
10. Themis: Economy-Based Automatic Resource Scaling for Cloud Systems. Stefania Victoria Costache; Nikos Parlavantzas; Christine Morin; Samuel Kortas. HPCC, 2012 (26.2%).
11. Semias: Self-Healing Active Replication on Top of a Structured Peer-to-Peer Overlay. Stefania Costache, Thomas Ropars, Christine Morin, SRDS, 2010 (21%).
12. Multiscaling Algorithms for Molecular Dynamics Simulations with GROMACS. Nicolae Goga, Siewert Marrink, Stefania Victoria Costache, Florica Moldoveanu, IEEE International Systems Conference, 2009.