Program Overview

Pre-Conference

Monday, 9th December
08:30–09:00  Registration
09:00–12:30  Workshop on Middleware for Next Generation Internet Computing
09:00–12:30  Tutorial on Designing and Evolving Distributed Architecture using Kevoree
12:30–14:00 Lunch at the LakeView
14:00–17:20 Workshop on Middleware for Cloud-enabled Sensing
14:00–17:30 Tutorial on Software-defined Networking for building high performance communication middleware

Tuesday, 10th December
08:30–09:00  Registration
09:00–12:30  Doctoral Symposium
12:30–14:00 Lunch at the LakeView
14:00–18:30 Workshop on Adaptive and Reflective Middleware
14:00–17:30 Tutorial on Building Internet Scale Distributed Systems with DDS

Main Conference

Wednesday, 11th December
08:00–08:45  Registration
08:45–10:00  Opening & Keynotes 1
10:00–10:20  Coffee Break & Poster/Demo Session 1
10:20–12:00 Research Session 1: Cloud computing (I) (4 papers)
12:00–13:30 Lunch at the LakeView
13:30–15:10 Industry Session 1 (4 papers)
15:10–15:30 Coffee Break & Poster/Demo Session 1
15:30–17:10 Research Session 2: Distributed protocols (I) (4 papers)
17:10–18:00 Business Meeting & Poster/Demo Session 1
18:00–20:00 Reception at the LakeView
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–09:00</td>
<td>Registration</td>
</tr>
<tr>
<td>09:00–10:00</td>
<td>Keynotes 2</td>
</tr>
<tr>
<td>10:00–10:20</td>
<td>Coffee Break &amp; Poster/Demo Session 2</td>
</tr>
<tr>
<td>10:20–12:00</td>
<td>Research Session 3: Cloud computing (II) (4 papers)</td>
</tr>
<tr>
<td>12:00–13:30</td>
<td>Lunch at the LakeView</td>
</tr>
<tr>
<td>13:30–14:00</td>
<td>10 Year Best Paper Award &amp; Invited Talk</td>
</tr>
<tr>
<td>14:00–14:50</td>
<td>Industry Session 2 (2 papers)</td>
</tr>
<tr>
<td>14:50–15:10</td>
<td>Coffee Break &amp; Poster/Demo Session 2</td>
</tr>
<tr>
<td>15:10–16:50</td>
<td>Research Session 4: Social networks (4 papers)</td>
</tr>
<tr>
<td>16:50–17:10</td>
<td>Coffee Break &amp; Poster/Demo Session 2</td>
</tr>
<tr>
<td>17:10–18:50</td>
<td>Research Session 5: Storage and services (4 papers)</td>
</tr>
<tr>
<td>19:00–21:00</td>
<td>Banquet at Quan Ju De Beijing Duck (with free round–trip shuttle bus)</td>
</tr>
</tbody>
</table>

**Thursday, 12th December**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–09:00</td>
<td>Registration</td>
</tr>
<tr>
<td>09:00–10:00</td>
<td>Keynotes 3</td>
</tr>
<tr>
<td>10:00–10:20</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10:20–12:00</td>
<td>Research Session 6: Distributed protocols (II) (4 papers)</td>
</tr>
<tr>
<td>12:00–13:30</td>
<td>Closing &amp; Lunch at the LakeView</td>
</tr>
</tbody>
</table>
Keynotes

Keynote by

Dr. Brian Cooper, Google, USA

Spanner: Google's Globally–Distributed Database

Abstract:

Spanner is Google's scalable, multi-version, globally-distributed, and synchronously-replicated database. It provides strong transactional semantics, consistent replication, and high performance reads and writes for a variety of Google's applications. Spanner relies on middleware services that provide a synchronized time abstraction (called TrueTime) and consensus-based replication (via Paxos). I'll discuss the design and implementation of Spanner, as well as some of the lessons we have learned along the way. I'll also discuss some open challenges that we still see in building scalable distributed storage systems.

Bio:

Brian F. Cooper is a software engineer and manager on the storage infrastructure team at Google. Previously, he was a principal research scientist at Yahoo! Research. His interests include distributed information systems and databases. Before that, he was an assistant professor at Georgia Tech, where he worked on self-managing peer-to-peer overlays and distributed in-network event processing. His PhD dissertation examined adaptive overlays for replicating data, and for searching for the replicated data once it had been scattered throughout a network.

Brian received his PhD in 2003 from Stanford University, where he worked in the database group, the digital library project, and the peer-to-peer group. His dissertation advisor was Hector Garcia-Molina.
Keynote by
Prof. Hong Mei, Peking University, China

Internetware: A Software Paradigm for Internet Computing

Abstract:
The Internet, once a network of networks, has become not only the platform of choice for delivering services to increasingly mobile users, but also the connective tissue between people, information and things. Almost all new and popular computing and application paradigms have been born in the Internet, or at least motivated by it, including Web 2.0, Social Networking, Mobile Internet, Cloud Computing, Internet of Things, and Big Data. Software has played a central part in the evolution of the Internet. The open, dynamic, evolving environment of Internet computing continues to demand new software technologies in order to realize its rapid paradigm shifts, and the new paradigm can be denoted as Internetware. The new software paradigm needs to meet an increasing number of requirements, including autonomous, situational, evolvable, cooperative, emergent, trustworthy, and so on. In this talk I will describe the Chinese researchers’ vision and effort on Internetware, especially on the middleware research and practice in the past decade.

Bio:
Hong MEI received a Bachelor’s degree and a Master’s degree in Computer Science from Nanjing University of Aeronautics & Astronautics (NUAA) in 1984 and 1987 respectively, and a Doctorate degree in Computer Science from Shanghai Jiao Tong University in 1992. From 1987 to 1989, he was working at NUAA as a research assistant. In 1992, he joined in Peking University (PKU) as a post–doctoral research fellow. From 1994 to present, he was working at the Department of Computer Science and Technology and the School of Electronics Engineering and Computer Science in PKU, and became associate professor in 1994 and full professor in 1997. In 2005, he became a "Chang Jiang Scholars Program" professor of Ministry of Education. In 2011, he was elected as a member of Chinese Academy of Sciences.

His current research is on Software Engineering and System Software, especially on software architecture, requirements engineering, component based development and middleware. He is the chief scientist of the Expert Committee for Computing Technology of State 863 High-Tech Program, the director of Technical Committee on System Software of China Computer Federation (CCF), and the Vice President of Chinese Software Industry Association (CSIA).
Keynote by

Prof. Hans–Arno Jacobsen,
University of Toronto, Canada

Not Just Your Average Publish/Subscribe:
Evolving To Support A New Generation Of Applications

Abstract:
The publish/subscribe paradigm has been integral in supporting a variety of distributed applications. Its simple yet powerful decoupling and filtering capabilities shine in scenarios that require selective data dissemination among many data sources and many data sinks. However, there are an emerging class of applications that strain traditional publish/subscribe systems. For example, social networks and traffic management scenarios manage volumes of data that necessitate aggregating or selecting only the most relevant events. Similarly, complex business process logic demand increasingly expressive matching semantics. While these requirements can be implemented at the system edge, we claim that they are better addressed as capabilities offered by the publish/subscribe system. In this talk, we present a number of novel techniques and extensions to the publish/subscribe paradigm, inspired by emerging use cases. This includes extensions to coordinate the execution of distributed business processes, techniques to aggregate across publication streams in support of traffic management, and extensions to compute the top–k matching subscriptions prevalent for tuning in on the relevant information in social networking. Finally, we hint at how core publish/subscribe operations could be accelerated through emerging hardware opportunities to support their efficient implementation. This work includes contributions from the University of Toronto & the Technical University Munich.

Bio:
Hans–Arno Jacobsen is a professor of Computer Science and Computer Engineering. He directs and leads the research activities of the Middleware Systems Research Group (msrg.org), which currently involves students at the University of Toronto and the Technical University Munich. From 2007–2011, he held the Bell University Laboratories Endowed Chair in Software. In 2012, he was honored with the Alexander von Humboldt Professorship award.

Aiming to ease the development of scalable, reliable, and secure large–scale distributed applications, Arno engages in research and development on event processing, publish/subscribe, distributed systems, data management, large–scale business process management, service delivery models, service and infrastructure management, and e–energy.
Pre-Conference

Workshop on Middleware for Next Generation Internet Computing
09:00–12:30, Dec. 9.
Da Xue Tang Room 2.

09:00–10:30: Session 1

Keynote: The IoT Services Middleware Technology
Jinglin Li, Institute of Network Technology, Beijing University of Posts and Telecommunications, China

P/S sockets: supporting publish/subscribe communication through the standard socket API
Manos Koutsoumpelias and Spyros Lalis

TMS – A Trusted Mail Repository Service using Public Storage Clouds
João Rodrigues, Bernardo Ferreira, and Henrique Domingos

10:30–11:00: Coffee Break

11:00–12:30: Session 2

Introducing concurrency in policy–based access control
Maarten Decat, Bert Lagaisse, Bruno Crispo, and Wouter Joosen

Modeling Uncertainty for Middleware–based Streaming Power Grid Applications
Ilge Akkaya, Yan Liu, Edward A. Lee, and Ian Gorton

Detecting Cloud Provisioning Errors Using an Annotated Process Model
Workshop on Middleware for Cloud–enabled Sensing
14:00–17:20, Dec. 9
Da Xue Tang Room 2.

14:00–15:15 Session 1: Innovation Trends in Cloud–enabled Sensing

Keynote: A Generic Framework for Cyber–Physical Web
   Xiaoling Gu (Zhejiang University, China)
   Lidan Shou (Zhejiang University, China)
   Hua Lu (Aalborg University, Denmark)
   Gang Chen (Zhejiang University, China)

Invited Presentation by the Xerox Innovation Group

15:15–15:45: Coffee Break

15:45–17:15 Session 2: Mobile and Cloud Sensing
Towards Secure Outsourcing of Collaborative Sensing and Analytic Applications to the Cloud – the pCloud Approach
   Tien Tuan Anh Dinh (Nanyang Technological University, Singapore)
   Anwitaman Datta (Nanyang Technological University, Singapore)

A Mobile Crowdsensing System Enhanced by Cloud–based Social Networking Services
   Xiping Hu (The University of British Columbia, Vancouver, Canada)
   Qiang Liu (National University of Defense Technology, Changsha, China)
   Chunsheng Zhu (The University of British Columbia, Vancouver, Canada)
   Victor C.M. Leung (The University of British Columbia, Vancouver, Canada)
   Terry H.S. Chu (The Hong Kong Polytechnic University, Hongkong)
   Henry C.B. Chan (The Hong Kong Polytechnic University, Hongkong)

Offloading work to Mobile Devices: An Availability–aware Data Partitioning Approach
   Ansuman Banerjee (Indian Statistical Institute, Kolkata, India)
   Arijit Mukherjee (Innovation Labs, TATA Consultancy Services, Kolkata, India)
   Himadri Sekhar Paul (Innovation Labs, TATA Consultancy Services, Kolkata, India)
   Swarnava Dey (Innovation Labs, TATA Consultancy Services, Kolkata, India)

17:15–17:20 Concluding Remarks
Workshop on Adaptive and Reflective Middleware
14:00–18:30, Dec.10
Da Xue Tang Room 2.

14:00–15:00: Keynote

On the Role of ARM in Cognitive Systems
Renato Cerqueira, IBM Research Brazil / Pontifical Catholic University, Rio de Janeiro (PUC–Rio), Brazil

15:00–15:30: Coffee Break

15:30–17:00: Session 1

Towards Interoperability between Heterogeneous Distributed Components
Sidney Casseimiro Do Nascimento, Felipe Oliveira Carvalho and Tarcisio Da Rocha

Clotho: An Elastic MapReduce Workload/Runtime Co–design
Weiming Shi and Bo Hong

Adaptive Semantics–Aware Management for Web Caches and Wikis
Carlos Roque, Paulo Ferreira and Luis Veiga

17:00–17:30: Coffee Break

17:30–18:30: Session 2

Policy–driven Middleware for Heterogeneous, Hybrid Cloud Platforms
Tom Desair, Wouter Joosen, Bert Lagaise, Ansar Rafique and Stefan Walraven

EsseOS: Haskell–based Tailored Services for the Cloud
Klaus Stengel, Florian Schmaus and Rüdiger Kapitza

18:30: Discussion, concluding remarks
09:00–10:30 Session 1: Analysis Systems (Chair: Anders Andersen)

**IDEA: Improving Dependability for Self-Adaptive Applications**
*Wenhua Yang, Nanjing University, China*

**VeriDroid: Automating Android Application Verification**
* Yepang Liu, The Hong Kong University of Science and Technology, China

**DPAC: An Infrastructure for Dynamic Program Analysis of Concurrency Java Programs**
*Yanyan Jiang, Nanjing University, China*

10:30–10:45 Coffee break

10:45–12:15 Session 2: System Reliability and Privacy (Chair: Chang Xu)

**Minimal Cut Sequence Generation for State/Event Fault Trees**
*Bingfeng Xu, Nanjing University of Aeronautics and Astronautics, China*

**Towards Privacy-Preserving Computing on Distributed Electronic Health Record Data**
*Kassaye Yitbarek Yigzaw, University of Tromsø, Norway*

**Model-based High Availability Configuration Framework for Cloud**
*Yihan Wu, Peking University, China*

12:15–12:30 Summary: General comments and recommendations from the mentors
Modern software applications are distributed and often operate in dynamic contexts, where requirements, assumptions about the environment, and usage profiles continuously change. These changes are difficult to predict and to anticipate at design time. The running software system should thus be able to react on its own, by dynamically adapting its behavior, in order to sustain a required quality of service. A key challenge is to provide the system with the necessary flexibility to perform self-adaptation, without compromising dependability. Models@Runtime is an emerging paradigm aiming at transferring traditional modeling activities (focusing on quality, verification, and so on) performed by humans, to the running system. In this trend, Kevoree provides a models@runtime platform to design heterogeneous, distributed and adaptive applications based on the component based software engineering paradigm. At the end of this tutorial, applicants will be able to develop and assemble new components and communication channel to design complex self-adaptable distributed architectures by reusing existing piece of code.

Tutorial 2: Software–defined Networking for building high performance communication middleware
14:00–17:30, Dec. 9
Da Xue Tang Room 4.

Advances in communication middleware facilitate building applications in a highly distributed setup by allowing for efficient and reliable exchange of information between many distributed components. However, so far the design of the communication middleware and its underlying performance is restricted to standard network protocols and happens without control on the underlying communication network. Software–Defined Networking (SDN) can be seen as a key technology with strong support from both academia and industry that gives middleware
systems more control over the communication network leveraging great flexibility, ease of implementation and testing, and high forwarding performance.

As part of this tutorial, we give an overview of the basic concepts behind SDN – relying on the principles of separation of network management (control plane) and forwarding functionality (forwarding plane), and logically centralized control – and their application to message-oriented middleware. The goal of this tutorial is to provide the basic practical knowledge to program software-defined networks using OpenFlow, and to demonstrate how applications and middleware systems can benefit from utilizing SDN.

Tutorial 3: Building Internet Scale Distributed Systems with DDS
14:00–17:30, Dec. 10
Da Xue Tang Room 4.

Nicolò Rivetti, PrismTech

The Data Distribution Service (DDS) is a standard for high-performance, scalable and real-time data sharing widely adopted across application domains, such as, Smart Cities, Smart Energy, Air Traffic Control and Management, Aerospace, Automated Trading, and SCADA. DDS’ widespread adoption stems from its ability to (1) scale from small embedded devices to internet scale systems; (2) deliver very high performance – high throughput and ultra low latency; (3) control key non-functional properties of data dissemination through a rich set of Quality of Service (QoS) Policies; and (4) enable the design of type-safe incrementally evolvable distributed systems.
Starting from a series of concrete use cases in Smart Cities, Smart Grids and Air Traffic Control, this tutorial will highlight the key challenges faced by Internet Scale applications and will show how DDS can address them all.
Main Conference

Zhong Hua Banquet Hall

Wednesday, Dec. 11

8:45–9:00 Opening Ceremony
   Chair: David Eyers, University of Otago, NZ

9:00–10:00 Keynote 1
   Chair: Karsten Schwan, Georgia Institute of Technology, USA
   Spanner: Google's Globally-Distributed Database
      Brian Cooper (Google, USA)

10:00–10:20 Coffee Break & Poster/Demo Session 1

10:20–12:00 Research Session 1: Cloud computing (I)
   Chair: Nalini Venkatasubramanian, University of California Irvine, USA
   DVFS aware CPU credit enforcement in a virtualized system
      Daniel Hagimont (INPT/ENSEEIHT, France),
      Christine Mayap (University of Toulouse, France),
      Laurent Broto (IRIT, France),
      Alain Tchana (UJF/LIG, France),
      Noel Depalma (INRIA/UJF, France)
   Elastic Remote Methods
      K. R. Jayaram (HP Labs, United States)

   Atmosphere: A Universal Cross-cloud Communication Infrastructure
      Chamikara Jayalath (Purdue University, United States),
      Julian Stephen (Purdue, United States),
      Patrick Eugster (Purdue University, United States)

   VMAR: Optimizing I/O Performance and Resource Utilization in the Cloud
      Middleware 2013

Zhiming Shen (North Carolina State University, United States),
Zhe Zhang (IBM T. J. Watson Research Center, United States),
Alexei Karve (IBM T. J. Watson Research Center, United States),
Andrzej Kochut (IBM T. J. Watson Research Center, United States),
Han Chen (IBM T. J. Watson Research Center, United States),
Minkyong Kim (IBM T. J. Watson Research Center, United States),
Hui Lei (IBM T. J. Watson Research Center, United States),
Nicholas Fuller (IBM T. J. Watson Research Center, United States)

12:00–13:30 Lunch at the Greenery Coffee Shop in LakeView

13:30–15:10 Industry Session 1
Chair: Luis Veiga, INESC ID / Technical University of Lisbon Portugal

FlowFlex: Malleable Scheduling for Flows of MapReduce Jobs
Vishwanath Nagarajan (IBM Research, United States),
Joel Wolf (IBM Research, United States),
Andrey Balmin (IBM Research, United States),
Kirsten Hildrum (IBM Research, United States)

GeoMix: Scalable Geoscientific Array Data Management
Yaoliang Chen (IBM China Research Laboratory, China),
Xiaomin Xu (IBM China Research Laboratory, China),
Pohan Li (Fudan University, China),
Siyuan Lu (IBM T. J. Watson Research Center, United States),
Sheng Huang (IBM China Research Laboratory, China),
Wei Lu (IBM China Research Laboratory, China),
Kevin Brown (IBM Informix Team, United States)

HybNET: Network Manager for a Hybrid Network Infrastructure
Hui Lu (Purdue, United States),
Nipun Arora (NEC Laboratories America, United States),
Hui Zhang (NEC Laboratories America, United States),
Cristian Lumezanu (NEC Laboratories America, United States),
Junghwan Rhee (NEC Laboratories America, United States),
Guofei Jiang (NEC Laboratories America, United States)

State Based Paxos
15:10–15:30  Coffee Break & Poster/Demo Session 1

15:30–17:10  Research Session 2: Distributed protocols (I)
Chair: Bettina Kemme, McGill University Canada

FastCast: a Throughput– and Latency–efficient Total Order Broadcast Protocol
Gautier Berthou (Grenoble University, France),
Vivien Quema (Grenoble INP, France)

VICINITY: A Pinch of Randomness Brings out the Structure
Spyros Voulgaris (Vrije Universiteit, Netherlands),
Maarten Van Steen (VU University Amsterdam, Netherlands)

Assured Cloud–based Data Analysis with ClusterBFT
Julian James Stephen (Purdue University, United States),
Patrick Eugster (Purdue University, United States)

Sprinkler – Reliable Broadcast for Geographically Dispersed Datacenters
Haoyan Geng (Cornell University, United States),
Robbert van Renesse (Cornell University, United States)

17:10–18:00  Business Meeting & Poster/Demo Session 1
18:00–20:00  Reception at the Da Xue Tang in LakeView
Thursday, Dec. 12

9:00–10:00  **Keynote 2**  
Chair: David Eyers, University of Otago, NZ

*Internetware: A Software Paradigm for Internet Computing*  
*Hong Mei (Peking University, China)*

10:00–10:20  **Coffee Break & Poster/Demo Session 2**

10:20–12:00  **Research Session 3: Cloud computing (II)**  
Chair: Wouter Joosen, KU Leuven, Belgium

*I2Map: Cloud Disaster Recovery based on Image–Instance Mapping*  
*Shripad Nadgowda (IBM Research, India), Praveen Jayachandran (IBM Research, India), Akshat Verma (IBM Research, India)*

*Cross-Tier Application & Data Partitioning of Web Applications for Hybrid Cloud Deployment*  
*Nima Kaviani (University of British Columbia, Canada), Eric Wohlstadter (University of British Columbia, Canada), Rodger Lea (University of British Columbia, Canada, Canada)*

*Efficient Batched Synchronization in Dropbox–like Cloud Storage Services*  
*Zhenhua Li (Peking University, Tsinghua University, China), Christo Wilson (Northeastern University, United States), Zhefu Jiang (Cornell University, United States), Yao Liu (Binghamton University, United States), Ben Zhao (UCSB, United States), Cheng Jin (University of Minnesota, United States), Zhi–Li Zhang (University of Minnesota, United States), Yafei Dai (Peking University, China)*

*Back to the Future: Using Magnetic Tapes in Cloud Based Storage Infrastructures*  
*Varun Prakash (University of Houston, United States), Xi Zhao (University of Houston, United States)*
12:00–13:20  Lunch at the Greenery Coffee Shop in LakeView

13:20–14:00  10 Year Best Paper Award & Invited Talk

Chair: Fabio Kon, University of São Paulo, Brazil

Peer-to-Peer Keyword Search: A Retrospective
Patrick Reynolds (GitHub, Inc, United States),
Amin Vahdat (University of California, San Diego, United States)

14:00–14:50  Industry Session 2

Chair: Frank Eliassen, University of Oslo, Norway

Forecasting Household Electricity Demand with Complex Event Processing: Insights from a Prototypical Solution
Holger Ziekow (AGT Group, Germany),
Christoph Doblander (Technical University Munich, Germany),
Christoph Goebel (Technical University Munich, Germany),
Hans–Arno Jacobsen (TU Munich, Germany)

Adaptive Middleware for Real–Time Prescriptive Analytics in Large Scale Power Systems
Sebnem Rusitschka (Siemens, Germany),
Hans–Arno Jacobsen (Technische Universität München, Germany)

14:50–15:10  Coffee Break & Poster/Demo Session 2

15:10–16:50  Research Session 4: Social networks

Chair: Gordon Blair, Lancaster University, UK

Views and Transactional Storage for Large Graphs
Michael Lee (UCSD, United States),
Indrajit Roy (HP Labs, United States),
Alvin Auyoung (HP Labs, United States),
Vanish Talwar (HP Labs, United States),
K.R. Jayaram (HP Labs, United States),
Yy Zhou (UCSD, United States)
DynaSoRe: Efficient In-Memory Store for Social Applications
Xiao Bai (Yahoo! Research, Spain),
Arnaud Jegou (Inria, France),
Flavio Junqueira (Microsoft Research, Cambridge, United Kingdom),
Vincent Leroy (University of Grenoble – CNRS, France)

O2SM: Enabling Efficient Offline Access to Online Social Media and Social Networks
Ye Zhao (University of California Irvine, United States),
Ngoc Do (University of California Irvine, United States),
Shu–Ting Wang (National Tsing Hua University, Taiwan),
Cheng–Hsin Hsu (National Tsing Hua University, Taiwan),
Nalini Venkatasubramanian (University of California Irvine, United States)

AnonyLikes: Anonymous Quantitative Feedback on Social Networks
Pedro Alves (IST, Portugal),
Paulo Ferreira (INESC ID / Technical University of Lisbon, Portugal)

16:50–17:10 Coffee Break & Poster/Demo Session 2

17:10–18:50 Research Session 5: Storage and services
Chair: Adam Oliner, University of California, Berkeley, USA

Transactional failure recovery for a distributed key–value store
Muhammad Yousuf Ahmad (McGill University, Canada),
Bettina Kemme (McGill University, Canada),
Ricardo Jimenez–Peris (Universidad Politecnica de Madrid, Spain),
Marta Patiño–Martínez (Universidad Politecnica de Madrid, Spain)

Efficient Node Bootstrapping for Decentralised Shared–nothing Key–value Stores
Han Li (University of New South Wales, Australia),
Srikumar Venugopal (University of New South Wales, Australia)

Testing Idempotence for Infrastructure as Code
Waldemar Hummer (Vienna University of Technology, Austria),
Florian Rosenberg (IBM T.J. Watson Research Center, United States),
Fabio Oliveira (IBM T.J. Watson Research Center, United States),
Tamar Eilam (IBM T.J. Watson Research Center, United States)
Self-scalable Benchmarking as a Service with Automatic Saturation Detection
Alain Tchana (UJF/LIG, France),
Bruno Dillenseger (Orange Labs, France),
Noel Depalma (UJF/LIG, France),
Xavier Eichevers (Orange Labs, France),
Jean–Marc Vincent (UJF/LIG, France),
Nabila Salmi (Orange Labs, France),
Ahmed Harbaoui (Orange Labs, France)

19:00–21:00  Banquet at Quan Ju De Beijing Duck
(Shuttle bus at the LakeView gate)
Friday, Dec. 13

9:00–10:00  Keynote 3
Chair: Gang Huang, Peking University, China

Not Just Your Average Publish/Subscribe: Evolving To Support A New Generation Of Applications
Hans–Arno Jacobsen, University of Toronto, Canada

10:00–10:20  Coffee Break

10:20–12:00  Research Session 6: Distributed protocols (II)
Chair: Paulo Ferreira, INESC ID / Technical University of Lisbon, Portugal

Experiences with Fault–Injection in a Byzantine Fault–Tolerant Protocol
Rolando Martins (Carnegie Mellon University, United States),
Rajeev Gandhi (Carnegie Mellon University, United States),
Priya Narasimhan (Carnegie Mellon University, United States),
Soila Kavulya (Carnegie Mellon University, United States),
António Casimiro (University of Lisbon Faculty of Sciences, Portugal),
Diego Kreutz (University of Lisbon Faculty of Sciences, Portugal),
Paulo Verissimo (University of Lisbon Faculty of Sciences, Portugal)

SplayNet: Distributed User–Space Topology Emulation
Valerio Schiavoni (University of Neuchatel, Switzerland),
Etienne Riviere (University of Neuchatel, Switzerland),
Pascal Felber (University of Neuchatel, Switzerland)

Ditto – Deterministic Execution Replayability–as–a–Service for Java VM on Multiprocessors
João Pedro Silva (Instituto Superior Técnico – UTL / INESC–ID Lisboa, Portugal),
José Simão (Instituto Superior Técnico / INESC–ID Lisboa / ISEL, Portugal),
Luis Veiga (Instituto Superior Técnico – UTL / INESC–ID Lisboa, Portugal)

Practical Out–of–Band Authentication for Mobile Applications
Kapil Singh (IBM T.J. Watson Research Center, United States),
Larry Koved (IBM T.J. Watson Research Center, United States)

12:00–13:30  Closing & Lunch at the Greenery Coffee Shop in LakeView
Poster/Demo Session 1 (Wednesday, Dec. 11)

(Poster) On High Performance Distributed Transactional Data Structures
Aditya Dhoke (Virginia Tech),
Roberto Palmieri (Virginia Tech),
Binoy Ravindran (Virginia Tech)

(Poster) SMASH: Speculative State Machine Replication in Transactional Systems
Sachin Hirve (Virginia Tech),
Roberto Palmieri (Virginia Tech),
Binoy Ravindran (Virginia Tech)

(Poster) CareDedup: Cache-aware Deduplication for Reading Performance Optimization in Primary Storage
Bin Lin (National University of Defense Technology, China),
Shanshan Li (National University of Defense Technology, China),
Xiangke Liao (National University of Defense Technology, China)

(Poster) A Load Balancing Algorithm in Multi-tenancy Environment
Tao Zhao (Beihang University, China),
Hailong Sun (Beihang University, China),
Yu Tang (Beihang University, China),
Xudong Liu (Beihang University, China)

(Demo) Automated Testing of Chef Automation Scripts
Waldemar Hummer (Vienna University of Technology, Austria),
Florian Rosenberg (IBM T.J. Watson Research Center, USA),
Fábio Oliveira (IBM T.J. Watson Research Center, USA),
Tamar Eilam (IBM T.J. Watson Research Center, USA)

(Demo) Smart Phone Application for Connected Vehicles and Smart Transportation
Yingqi Yue (University of Toronto, Canada),
Kaiwen Zhang (University of Toronto, Canada),
Hans-Arno Jacobsen (University of Toronto, Canada)

(Demo) T-CloudDisk: A Tunable Cloud Storage Service for Flexible Batched Synchronization
Zhenhua Li (Tsinghua University, China)
He Xiao (Tsinghua University, China),
Linsong Cheng (Tsinghua University, China),
Zhen Lu (Tsinghua University, China),
Jian Li (Tsinghua University, China),
Christo Wilson (Northeastern University, USA),
Yao Liu (Binghamton University, USA),
Yunhao Liu (Tsinghua University, China),
Yafei Dai (Peking University, China)

(Demo) SM@RT Offloader: Supporting Adaptive Computation Offloading for Android Applications
Huaqian Cai (Peking University, China),
Wei Zhang (Peking University, China),
Ying Zhang (Peking University, China),
Gang Huang (Peking University, China)

Poster/Demo Session 2 (Thursday, Dec. 12)

(Poster) Dynamic Datacenter Resource Provisioning for High-Performance Distributed Stream Processing with Adaptive Fault-Tolerance
Paolo Bellavista (Università di Bologna),
Antonio Corradi (Università di Bologna),
Spyros Kotoulas (Smarter Cities Technology Centre IBM Research Dublin),
Andrea Reale (Università di Bologna)

(Poster) Automated Data Partitioning for Independent Distributed Transactions
Alexandru Turcu (Virginia Tech),
Roberto Palmieri (Virginia Tech),
Binoy Ravindran (Virginia Tech)

(Poster) DGFIndex: A Hive Multidimensional Range Index for Smart Meter Big Data
Yue Liu (Institute of Computing Technology, Chinese Academy of Sciences, China),
Wantao Liu (Institute of Computing Technology, Chinese Academy of Sciences, China),
Zheng Xiao (State Grid Electricity Science Research Institute, China),
Weihao Qiu (Zhejiang Electric Power Corporation, China),
Yanhu Li (Institute of Computing Technology, Chinese Academy of Sciences, China),
Ying Liang (Institute of Computing Technology, Chinese Academy of Sciences, China)
(Poster) MobiTran: Tool Support for Refactoring PC Websites to Smart Phones
Yun Ma (Peking University, China),
Yimeng Fang (Peking University, China),
Xiaomin Zhu (Peking University, China),
Xuanzhe Liu (Peking University, China),
Gang Huang (Peking University, China)

(Demo) OFacebook: Enabling Offline Access to Facebook Streams on Mobile Devices
Ye Zhao(University of California Irvine, USA),
Ngoc Do(University of California Irvine, USA),
Shu–Ting Wang(Tsing Hua University, Taiwan, China),
Cheng–Hsin Hsu (Tsing Hua University, Taiwan, China),
Nalini Venkatasubramanian(University of California Irvine, USA)

(Demo) FTCloudSim: A Simulation Tool for Cloud Service Reliability Enhancement Mechanisms
Ao Zhou (Beijing University of Posts and Telecommunications, China) ,
Shangguang Wang(Beijing University of Posts and Telecommunications, China),
Qibo Sun(Beijing University of Posts and Telecommunications, China),
Hua Zou(Beijing University of Posts and Telecommunications, China),
Fangchun Yang (Beijing University of Posts and Telecommunications, China)

(Demo) Galaxie: A P2P Based EDSOA Platform for Cloud Services
Chen Shen (Beijing University of Posts and Telecommunications, China),
Yao Zhao (Beijing University of Posts and Telecommunications, China),
Liang Chen (Zhejiang University, China)

(Demo) Predicting Unknown QoS Value with QoS–Prophet
You Ma (Beijing University of Posts and Telecommunications, China),
Shangguang Wang (Beijing University of Posts and Telecommunications, China),
Qibo Sun (Beijing University of Posts and Telecommunications, China),
Hua Zou (Beijing University of Posts and Telecommunications, China),
Fangchun Yang (Beijing University of Posts and Telecommunications, China)
Program Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisa Amini</td>
<td>IBM Research, Ireland</td>
</tr>
<tr>
<td>Jean Bacon</td>
<td>University of Cambridge, UK</td>
</tr>
<tr>
<td>Ken Birman</td>
<td>Cornell University, USA</td>
</tr>
<tr>
<td>Gordon Blair</td>
<td>Lancaster University, UK</td>
</tr>
<tr>
<td>Rajkumar Buyya</td>
<td>The University of Melbourne, Australia</td>
</tr>
<tr>
<td>Roy Campbell</td>
<td>University of Illinois Urbana–Champaign, USA</td>
</tr>
<tr>
<td>Antonio Carzaniga</td>
<td>University of Lugano, Switzerland</td>
</tr>
<tr>
<td>António Casimiro</td>
<td>University of Lisboa, Portugal</td>
</tr>
<tr>
<td>Abhishek Chandra</td>
<td>University of Minnesota, USA</td>
</tr>
<tr>
<td>Lucy Cherkasova</td>
<td>HP Labs, USA</td>
</tr>
<tr>
<td>Brian Cooper</td>
<td>Google, USA</td>
</tr>
<tr>
<td>Dilima Da Silva</td>
<td>Qualcomm, USA</td>
</tr>
<tr>
<td>Sudipto Das</td>
<td>Microsoft Research, USA</td>
</tr>
<tr>
<td>Xavier Défago</td>
<td>JAIST, Japan</td>
</tr>
<tr>
<td>Tudor Dumitras</td>
<td>Symantec Research Labs, USA</td>
</tr>
<tr>
<td>Frank Eliassen</td>
<td>University of Oslo, Norway</td>
</tr>
<tr>
<td>Patrick Eugster</td>
<td>Purdue University, USA</td>
</tr>
<tr>
<td>Pascal Felber</td>
<td>University of Neuchatel, Switzerland</td>
</tr>
<tr>
<td>Paulo Ferreira</td>
<td>INESC ID / Technical University of Lisbon, Portugal</td>
</tr>
<tr>
<td>Jose Fortes</td>
<td>University of Florida, USA</td>
</tr>
<tr>
<td>Davide Frey</td>
<td>INRIA, France</td>
</tr>
<tr>
<td>Xiaohui Gu</td>
<td>North Carolina State University, USA</td>
</tr>
<tr>
<td>Rachid Guerraoui</td>
<td>EPFL, Switzerland</td>
</tr>
<tr>
<td>Matti Hiltunen</td>
<td>AT&amp;T Labs Research, USA</td>
</tr>
<tr>
<td>Kévin Huguenin</td>
<td>EPFL, Switzerland</td>
</tr>
<tr>
<td>Valerie Issarny</td>
<td>INRIA, France</td>
</tr>
<tr>
<td>Arun Iyengar</td>
<td>IBM Research, USA</td>
</tr>
<tr>
<td>Hans–Arno Jacobsen</td>
<td>University of Toronto, Canada</td>
</tr>
<tr>
<td>Wouter Joosen</td>
<td>KU Leuven, Belgium</td>
</tr>
<tr>
<td>Vana Kalogeraki</td>
<td>AUEB, Greece</td>
</tr>
<tr>
<td>Bettina Kemme</td>
<td>McGill University, Canada</td>
</tr>
<tr>
<td>Anne–Marie Kermarrec</td>
<td>INRIA, France</td>
</tr>
<tr>
<td>Fabio Kon</td>
<td>University of São Paulo, Brazil</td>
</tr>
<tr>
<td>Vibhore Kumar</td>
<td>IBM Research, USA</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Ying Li</td>
<td>Peking University, China</td>
</tr>
<tr>
<td>Harry Li</td>
<td>Facebook, USA</td>
</tr>
<tr>
<td>Joseph Loyall</td>
<td>Raytheon BBN Technologies, USA</td>
</tr>
<tr>
<td>Sebastian Michel</td>
<td>Saarland University, Germany</td>
</tr>
<tr>
<td>Dejan Milojicic</td>
<td>HP Labs, USA</td>
</tr>
<tr>
<td>Elie Najm</td>
<td>Telecom–ParisTech, France</td>
</tr>
<tr>
<td>Priya Narasimhan</td>
<td>Carnegie Mellon University, USA</td>
</tr>
<tr>
<td>Nikos Ntarmos</td>
<td>University of Glasgow, UK</td>
</tr>
<tr>
<td>Adam Oliner</td>
<td>University of California, Berkeley, USA</td>
</tr>
<tr>
<td>Esther Pacitti</td>
<td>LIRMM and INRIA, University of Montpellier 2, France</td>
</tr>
<tr>
<td>Peter Pietzuch</td>
<td>Imperial College London, UK</td>
</tr>
<tr>
<td>Padmanabhan Pillai</td>
<td>Intel Labs, USA</td>
</tr>
<tr>
<td>Rick Schlichting</td>
<td>AT&amp;T Labs Research, USA</td>
</tr>
<tr>
<td>Douglas Schmidt</td>
<td>Vanderbilt University, USA</td>
</tr>
<tr>
<td>Swami Sivasubramanian</td>
<td>Amazon, USA</td>
</tr>
<tr>
<td>Mike Spreitzer</td>
<td>IBM Research, USA</td>
</tr>
<tr>
<td>Peter Triantafillou</td>
<td>University of Patras, Greece</td>
</tr>
<tr>
<td>Luis Veiga</td>
<td>INESC ID / Technical University of Lisbon, Portugal</td>
</tr>
<tr>
<td>Nalini Venkatasubramanian</td>
<td>University of California Irvine, USA</td>
</tr>
<tr>
<td>Stratis Viglas</td>
<td>University of Edinburgh, UK</td>
</tr>
<tr>
<td>Spyros Voulgaris</td>
<td>VU University, Netherlands</td>
</tr>
<tr>
<td>Dave Ward</td>
<td>Amazon, USA</td>
</tr>
<tr>
<td>Huaimin Wang</td>
<td>National University of Defense Technology, China</td>
</tr>
<tr>
<td>Charles Zhang</td>
<td>The Hong Kong University of Science and Technology, China</td>
</tr>
<tr>
<td>Xiaoyun Zhu</td>
<td>VMware, USA</td>
</tr>
</tbody>
</table>
Beijing Guide

Although Beijing is a safe modern city, it can be quite overwhelming for the first-time foreigner (“laowai” 老外) visitor. This guide provides focused tips for such visitors.

What to pack

Beijing is a modern city and if you forget something you should be able to find and buy it fairly easy. However, it is wise to bring essential toiletries as some things are difficult to find here or may be very expensive; e.g., deodorant is not common while toothpaste and toothbrushes are just very different from back in the west. The most important thing for us to consider when packing is the power cord for our laptop. Although China has standardized Y-plug, most power outlets support standard American flat plugs and European pin plugs (bring an adapter from the UK though). However, these plugs do not always support ground pins, so bring a non-grounding cord if possible.

Transportation

As mentioned in the “Travel” page, taxis are cheap, safe, but taxi drivers usually speak only Chinese. If you want to go somewhere and you cannot say the name in Chinese, make sure to have the name and address written down in Chinese (your hotel can often help with that). Beijing also has a useful subway network where the “East Gate of Peking University” station on Line 4 is near the Lakeview hotel (and PKU Global Village hotel is very close to the station). The subway is especially useful if you need to go somewhere during rush hour because Beijing traffic can be crazy bad. Subway fare is 2 RMB (fixed to one travel to any station with unlimited line exchanges).

Beijing also has a bus system with more direct routes, but given the best reason to avoid a taxi is because of surface traffic, they are often not very useful than going to the suburbs.

Where to eat

Beijing has many nice restaurants in many varieties (especially Chinese food). A good listing of popular restaurants are provided in the expat magazines That’s Beijing, The Beijinger, and City Weekend, which are generally free and can be found on the magazine racks at foreigner hangouts like Starbucks. Vegetarian is more difficult to deal with in Beijing and cannot really be found outside of Beijing’s East side; vegetable dishes in normal Chinese restaurants generally rely heavily on meat bases (to say you can't eat meat: “wo bu neng chi rou 我不能吃肉”). Halal is easier given Beijing's many Xinjiang (新疆) and Hui (回) restaurants. If you are allergic or want to avoid MSG, a good phrase to write down is 不要味
精 (bu yao wei jing). Mushrooms are common in food, so if you have an allergy be careful (to say you can’t eat mushroom: “wo bu neng chi mo gu 我不能吃蘑菇”).

Zhong Guan Cun, the silicon valley in China, has many Chinese and western restaurants. It is easy to reach by the subway, bus or taxi from the Lakeview hotel (just kilometers away). It can be quite an adventure just to wander around this area and try a restaurant, but be careful to check the Chinese characters of the restaurant to know what they specialize in. Ideas for eating local in Beijing:

Beijing is famous for its duck (known in the west as Peking Duck). There are many duck restaurants in Beijing, but you’ll usually need to make a reservation ahead of time to eat Beijing duck (the concierge at your hotel can help). The most famous duck restaurant is QuanJuDe 全聚德 and our banquet will be taken in it.

Many restaurants specialize in hot pot (火锅), where you get a pot of boiling water at the table, and you pick the raw ingredients to add yourself. Cook a bit, eat a bit, and keep going. Popular ingredients include thinly sliced beef and lamb, leafy vegetables, and noodles. There are two main kinds of hot pot in Beijing: the spicy Sichuan hot pot and the local Beijing hot pot, where the latter pot is distinguished by being some kind of brass tower. Chopstick skills are essential.

Some restaurants specialize in boiled pork dumplings (饺子). There will be several flavors (vegetables and spices that go in the dumplings) to choose from; even cactus! There are many quick–service restaurants that specialize in beef noodle soup. Look for “拉面” on the sign and maybe a picture of a bull’s head, which is also common at any Hui (回) restaurant. A big ”粥” means a restaurant that serves rice porridge, where the menu is essentially a list of choices for what is add to the porridge. Restaurants that specialize in spicy Sichuan (四川) food are a staple in Beijing, just look for the 川. If you are looking for safety, it is hard to go wrong with Beijing’s own Kungpao Chicken (宫爆鸡丁). Finally, many restaurants will serve lamb or chicken kebobs, especially the Xinjiang ones but also many of the Beijing (家菜) and Sichuan ones; just look for the chuanr 串 character, which coincidentally looks like pieces of meat skewered on a stick.

Where to play

The conference hotel is in the campus of Peking University and near to the Old Summer Palace, both are deserved to walk around. However, for decent nightlife and higher–end restaurants, you’ll have to taxi to other parts of Beijing.

Sanlitun (三里屯) is the main bar area of Beijing and also has a nice shopping center (Sanlitun Village) with various upscale restaurants and an Apple store. Being in the embassy district, it also has the widest variety of non–Chinese food in the city. The bars on the main bar street are expensive not very interesting; most of us hang at the smaller bars north of the Village, or some more exotic places spread out around the area. Sanlitun also contains the “Silk Market,” which are bazaars oriented at tourists, selling many authentic and unauthentic (Shanzhai)
goods.

Houhai (后海) is a lake in Beijing's charming “hutong” district (hutong being a traditional Beijing courtyard house). There are many bars around the lake, many of them with lakeside outdoor seating that are particularly nice in June during the conference.

Nanluoguxiang (南锣鼓巷), east of Huohai but still requires a taxi ride; street of hutongs converted into bars, restaurants, and other interesting shops. Rooftop hutong drinking is a common.

And of course, tons of tourists locations like Tiananmen and Wangfujing (王府井), although these places might be too far and touristy to be useful during the conference itself.

**Staying safe**

Beijing is a very safe city where violent crime is very rare. However, as when visiting any crowded city, watch your belongings especially in crowded venues. Beijing also has many scams that target tourists explicitly. For example, a nice girl asks you to go have tea with her, you agree, have tea, and then get the check to learn that this tea has cost you 1000 RMB! A more wicked variation of this scam often occurs in seedy bars, so just stay away from those completely.

**Internet**

Free Wifi access is common in Beijing, and should be available at your hotel. However, Facebook, Google+, YouTube, Blogspot, Wordpress (hosted), Googledocs, and Twitter do or may not work here and you should not depend on using these services unless you have a VPN. Search engines hosted outside of China are periodically blocked on many networks after a few minutes of use, so you may want to try baidu.com or cn.bing.com for your search needs. Starbucks will usually require a Chinese mobile phone to use their Internet, and you’ll need someone to help you out on this (ask the baristas). Costas (the UK Starbucks) does not require a mobile phone and so can be a better option. Speeds here are not that great, so don’t expect to do much video.

**Language**

English is not very commonly spoken, and the only places where you can be sure someone will speak English is at your hotel, high-end restaurants, and Starbucks. However, you can get pretty far in Beijing without speaking Chinese; e.g., by having your destination written down in Chinese for your taxi driver. Some basic Chinese can be used as a courtesy, and is possibly useful in specific situations:

- **Xiexie (shieh shieh)** – thank you.
- **Buyao (boo yow)** – don’t want and please stop bugging me; useful for dealing with touts and hawkers.
- **Daole or tingche (dowlah or tingcheh)** – arrived; you want the taxi driver to stop and let you off!
Excursions

With its history and culture, Beijing is a great city for tourism. Definitely check out the Imperial City, Tiananmen, Qianmen, and Beihai Park in the center of the city (inside the "1st" ring road which is actually the walls of the imperial city!); you can probably do this on your own by taxi or subway, no guide necessary! Excursions outside of the city to see, for example, the Great Wall, will probably require at least a hired car/driver, if not a guide. Your hotel can arrange this for you, but shopping around might get you a better deal. Then of course there are many other cities to see in China; I'm particularly fond of Guilin and Yangshuo in southern China, but a discussion of what to do in China is too large to fit in this tiny article!