

Alex Bikfalvi, PhD

Curriculum Vitae

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Career

02/2018 – present **Software Architect**, Midokura, Barcelona, Spain
11/2017 – present **Software Engineer**, Schibsted Media Group, Barcelona, Spain
05/2014 – 11/2017 **Software Engineer**, Midokura, Barcelona, Spain
04/2014 – 07/2014 **Lecturer**, Pompeu Fabra University, Barcelona, Spain
09/2012 – 04/2014 **Postdoctoral Fellow**, Pompeu Fabra University, Barcelona, Spain
10/2008 – 07/2012 **Doctoral Fellow**, Carlos III University, Madrid, Spain
10/2007 – 12/2011 **Research Assistant**, IMDEA Networks Institute, Madrid, Spain
02/2007 – 09/2007 **Software Engineer**, Alcatel-Lucent, Sydney, Australia
10/2006 – 02/2007 **Software Engineer**, Alcatel-Lucent, Timișoara, Romania
04/2005 – 02/2006 **Research Intern**, Siemens, Brașov, Romania

Education

07/2012 **Doctor of Philosophy (PhD)**, Telecommunications Engineering
Carlos III University, Madrid, Spain
Thesis: *Peer-to-Peer Television for the IP Multimedia Subsystem*
Grade: honors
07/2008 **Master of Science (MSc)**, Telecommunications Engineering
Carlos III University, Madrid, Spain
Thesis: *Nozzilla: A Novel Peer to Peer Architecture for Video Streaming*
Grade: class distinction (exams average 9.5/10, thesis defense 10/10)
07/2006 **Engineering Degree (Dipl.Ing.)**, Telecommunications Engineering
Technical University of Cluj-Napoca, Cluj-Napoca, Romania
(thesis completed at Polytechnic University of Catalonia, Barcelona, Spain)
Thesis: *The Management Infrastructure of a Network Measurement System*
Grade: valedictorian (exams average 9.86/10, thesis defense 10/10)

R&D Projects

02/2018 – present **Edge-Computing Insights**, Midokura
Software architecture consultant for a cloud service (SaaS) focused on edge-computing and machine learning.
Project: <https://beta.insights.midokura.com/>
11/2017 – present **Data Analytics**, Schibsted Media Group
Software developer for engineering productivity data analytics software using Kafka as data processing back-end.

- 01/2017 – 11/2017 **Cloud Insights**, Midokura
Technical lead for datacenter and network virtualization analytics, monitoring and remote management software-as-a-service (SaaS). Leading engineering specifications and agile development process (daily stand-ups, refinements, sprints planning, retrospectives). Delivered public beta release in 5 months and adding new features ever since.
 Project: <https://beta.insights.midokura.com/>
- 05/2014 – 11/2017 **MidoNet**, Midokura
Senior developer for open-source network virtualization software for infrastructure-as-a-service (IaaS) clouds. Feature lead for distributed VPNaaS virtualized network function.
 Project: <https://github.com/midonet/midonet>
- 10/2007 – 12/2009 **BioGridNet**, Government of the Autonomous Region of Madrid
Involved in the research and prototype implementation of novel networking technologies for content distribution such as files, audio and video.
- 10/2007 – 09/2009 **CONTENT Network of Excellence**, FP6 European Commission
Involved in the research and prototype implementation of distributed bioinformatics application using a middle-layer based on and distributed network protocols and computational GRID services.
- 02/2007 – 09/2007 **IBM/Micromuse Netcool Integration**, Alcatel-Lucent
Involved in the software integration and testing of the network management solution IBM Netcool and Business Objects XI for business intelligence.
- 10/2006 – 02/2007 **LHS BSCS iX Integration**, Alcatel-Lucent
Involved in the software development and integration for a large billing solution based on Ericsson BSCS iX.
- 03/2006 – 06/2006 **EU-QoS**, FP6 European Commission
Implemented a high-performance QoS measurement tool for Endace DAG hardware during an Erasmus exchange at Polytechnic University of Catalonia.

Skills

Programming Languages

- **Java**: Proficient in *Java6*, *Java7* (5+ years), *Java8* (3 years)
- **C/C++**: Proficient in *C++98*, *C++03* (5 years), *C++11* (<1 year)
- **Scala**: Proficient in *Scala 2.x* (3 years)
- **C#**: Proficient in *C# 3.0*, some knowledge of *C# 4.0* and *C# 5.0* concepts (3 years)
- **Python**: Intermediate in *Python 2.x/3.x* (2 years)

Platforms

- **Java**: Focus and high-throughput, low-latency applications: memory optimization, GC-tuning, off-heap data structures, lock-free algorithms/concurrency, low-level APIs. Integration with native code, native function calls (JNI, JNA) and kernel driver calls (Netlink). Experience with core and third-party libraries: *Guice*, *Guava*, *Jackson*, *Jersey*, *Netty*, *RxJava*, *JPA*, database clients, etc. (5+ years)
- **.NET**: Proficient in *.NET 4.0*, some knowledge of *.NET 4.5*: Winforms, sockets, web services, database connectivity/ODBC, remoting, LINQ, some experience with WPF and WCF (4 years)
- **Win32**: Experience with multi-threading, memory management, inter-process communication, sockets and network services, GUI (3 years)

- **Linux:** *glibc, Qt* (GUI) (3 years)
- **Web:** *HTML, JavaScript* (jQuery), *CSS, JSON* (2 years)

Networking

- **Protocols:** Programming for *SNMPv1* (RFC 341x), *TFRC* (RFC 3448) and *IPv4* (RFC 791)/*UDP* (RFC 768) for Endace measurement hardware, *OVSDB/hardware VTEP* (RFC 7074); extensive knowledge and implementation of many other protocols (IEEE 802.3, IEEE 802.11, IPv6, TCP, SIP, HTTP, MobileIP, DHCP, IPSec, BGP, RIP, OSPF, etc.)
- **Standards:** Internet (IETF standards, 4 years), IP Multimedia Subsystem (3GPP/TISPAN standards, deployment and research experience), GSM/GPRS/UMTS/LTE (ETSI/3GPP standards, knowledge only)

Databases

- **Oracle:** Development for Oracle 10g/11g in both native (C/C++) and managed code (C++/C#); integration (with Business Objects XI); deployment (3 years)
- **SQL:** Client for MS SQL 2012 in managed code (C#) and MySQL, MariaDB (Java) (<2 years)
- **NoSQL:** ZooKeeper (3 years), Cassandra (3 years), Elasticsearch (1 year), MongoDB (1 year)

Enterprise

- **Cloud:** *OpenStack* (<3 years)
- **Containers:** *Docker* (<3 years), *Kubernetes* (<1 year)
- **Testing:** *HP Load Runner, HP QuickTest Professional, HP Quality Center* (<1 year)
- **Management:** Integration experience with *IBM Netcool/OMNIbus* (<1 year)
- **Billing:** Development and integration experience with *Ericsson BSCS iX* (<1 year)

Multimedia

- **Architectures:** Internet-Protocol television, Internet live streaming and video-on-demand (client/server, CDN-based, peer-to-peer, caching strategies)
- **Protocols:** *RTP/RTCP* (RFC 3550)
- **Algorithms:** Knowledge of MPEG-1 Part 2, MPEG-4 Part 10 / H.264 / AVC

Research

Talks

1. *Containerizing Network Services*, OpenStack Summit Austin, Texas, April 2016
Abstract: <https://www.openstack.org/summit/austin-2016/summit-schedule/events/8827>
Recording: <https://www.youtube.com/watch?v=xUNs4V03ljk>
2. *MidoNet 101*, FOSDEM, Brussels, Belgium, January 2015
Abstract: https://archive.fosdem.org/2015/schedule/event/midonet_101/
Recording: <https://www.youtube.com/watch?v=ScLLcmx8Uco>

Journals

1. M. Palacin, M. Oliver, J. Infante, S. Oechsner, and A. Bikfalvi. *The Impact of Content Delivery Networks on the Internet Ecosystem*. *Journal of Information Policy*, 3: 304-330, 2013.
2. A. Bikfalvi, J. García-Reinoso, I. Vidal, F. Valera, and A. Azcorra. *P2P vs. IP Multicast: Comparing Approaches to IPTV Streaming Based on TV Channel Popularity*. *Computer Networks*, 55(6):1310-1325, April 2011.
3. I. Vidal, J. García-Reinoso, A. de la Oliva, A. Bikfalvi, and I. Soto. *Supporting Mobility in an IMS-Based P2P IPTV Service: A Proactive Context Transfer Mechanism*. *Computer Communications (Special Issue on Multimedia Networking and Security in Convergent Networking)*, 33(14):1736-1751, September 2010.
4. I. Vidal, J. García-Reinoso, F. Valera, and A. Bikfalvi. *Enabling Layered Video Coding for IMS-Based IPTV Home Services*. *IEEE Network*, 23(6):3035, November 2009.
5. A. Bikfalvi, J. García-Reinoso, I. Vidal, and F. Valera. *A Peer-to-Peer IPTV Service Architecture for the IP Multimedia Subsystem*. *International Journal of Communication Systems*, 23(67):780801, 2009.
6. I. Martínez-Yelmo, A. Bikfalvi, R. Cuevas, C. Guerrero, and J. García-Reinoso. *H-P2PSIP: Interconnection of P2PSIP Domains for Global Multimedia Services Based on a Hierarchical DHT Overlay Network*. *Computer Networks (Special Issue on Content Distribution Infrastructures for Community Networks)*, 53(4):556568, March 2009.
7. I. Martínez-Yelmo, A. Bikfalvi, C. Guerrero, R. Cuevas, and A. Mauthe. *Enabling Global Multimedia Distributed Services Based on Hierarchical DHT Overlay Networks*. *International Journal of Internet Protocol Technology (Special Issue on Future Multimedia Networking)*, 3(4):234244, December 2008.
8. A. Escribano, A. Azcorra, E. Cañizares, and A. Bikfalvi. *Geographical Segmentation in Telecommunication Services: Economic and Technological Aspects*. *Telefónica Política Económica y Regulatoria en Telecomunicaciones*, 1(1):7487, September 2008.

Conferences

1. M. Palacin, A. Bikfalvi, M. Oliver. *Analyzing the Interconnection Models of Content Providers*. In *Proceedings of ACM Traffic Monitoring and Analysis (TMA) Conference (PhD School Workshop)*, April 2015.
2. M. Palacin, A. Bikfalvi, M. Oliver. *Mercury: Revealing Hidden Interconnections Between Access ISPs and Content Providers*. In *Proceedings of the 20th EUNICE Conference*, September 2014.
3. M. Palacin, A. Bikfalvi, M. Oliver. *Rethinking PlanetLab for Internet Measurements*. In *Proceedings of Internet Measurement Conference (News and Community Feedback Session)*, October 2013.
4. D. Díez-Hernández, J. García-Reinoso, A. García-Martínez, A. Bikfalvi, and I. Vidal. *Distributed Management of Application Layer Multicast Trees for IPTV Services*. In *Proceedings of IX Jornadas de Ingeniería Telemática*, September–October 2010.
5. J. García-Reinoso, A. Bikfalvi, I. Vidal, and F. Valera. *FLaCoSt: A Novel Peer-to-Peer Architecture for Video Streaming in a Next Generation Network*. In *Proceedings of the 2009 First International Conference on Advances in P2P Systems*, pages 186–191. IEEE Computer Society, October 2009.
6. I. Martínez-Yelmo, A. Bikfalvi, and C. Guerrero. *Benefits on Using H-P2PSIP in Mobile Environments*. In *Proceeding of VIII Jornadas de Ingeniería Telemática*, September 2009.
7. A. Bikfalvi, J. García-Reinoso, I. Vidal, and F. Valera. *Nozzilla: A Peer-to-Peer IPTV Distribution Service for an IMS-based NGN*. In *Proceedings of the 2009 Fifth International Conference on Networking and Services*, pages 450–455. IEEE Computer Society, April 2009.

8. I. Martinez-Yelmo, A. Bikfalvi, C. Guerrero, R. Cuevas, and A. Mauthe. *Enabling Global Multimedia Distributed Services Based on Hierarchical DHT Overlay Networks*. In Proceedings of the IEEE Conference on Next Generation Mobile Applications Services and Technologies 2008 (Future Multimedia Networking Workshop), pages 543–549. IEEE Computer Society, September 2008.
9. A. Bikfalvi, P. Pătraș, C. M. Vancea, and V. Dobrotă. *The Management Infrastructure of a Network Measurement System for QoS Parameters*. In Proceedings of the International Conference on Software in Telecommunications and Computer Networks (SoftCOM), pages 242–246. IEEE Computer Society, September-October 2006.

Teaching

2013 – 2014	Architecture and Signaling (BSc, 2013-21734-T1), Pompeu Fabra University
2012 – 2013	Architecture and Signaling (BSc, 2012-21734-T1), Pompeu Fabra University <i>Course focused on telecom architectures and signaling systems (H.323, SIP, GSM, etc.)</i>
2012 – 2013	Distributed Protocols (BSc, 2012-21728-T1), Pompeu Fabra University <i>Course focused on distributed protocols and systems (peer-to-peer, directory services, CDNs, etc.)</i>
2012 – 2013	Networking Laboratory (BSc, 2012-21744-T1), Pompeu Fabra University <i>Practical course with Cisco equipment (LAN, WLAN, switching, routing, firewall, etc.)</i>
2008, 2009, 2010	Network Security (MSc, ERASMUS MUNDUS Network and E-Business Centered Computing), Carlos III University <i>Practical exercises with Virtual Private Networks.</i>

Other

Awards/Distinctions

- *Doctoral Excellence Prize* offered by Carlos III University to the best 4 theses in the field of Information Technology (November 2012)
- *”FPU” Scholarship* (Programa de Formación del Profesorado Universitario - Training Program for University Professors), 1 out of 26 scholarships awarded by the Spanish government in 2009 for 4 years in the field of Electronic Technology and Communications
- *Diploma of Excellence*, Faculty of Electronics, Telecommunications and Information Technology, Technical University of Cluj-Napoca (July 2006)
- *Diploma of Excellence*, Technical University of Cluj-Napoca (June 2006)
- *Siemens Intern Scholarship*, awarded by Siemens PSE to 4 students from the Faculty of Electronics, Telecommunications and Information Technology, Technical University of Cluj-Napoca (February 2005)
- *Merit Scholarship*, Technical University of Cluj-Napoca, awarded for completing 3 or more years with an average grade above 9.5/10 (2004)
- *Study Scholarship*, Technical University of Cluj-Napoca (2001)
- *Certificate of Assistant Programmer in Computer Science*, ”Traian Lalescu” Computer Science National High-School (2001)

Service to the Research Community

- Editor of *IARIA International Journal on Advances in Networks and Services* (since 2011)

- Technical program committee member of *IARIA ICNS* in 2010, 2011, 2012, 2013
- Reviewer for Elsevier *Computer Networks*, Elsevier *Computer Communications* MDPI Publishing *Future Internet*, IEEE *Communications Surveys and Tutorials*, IFIP *Networking 2011*