Kenneth Skovhede

Curriculum Vitae

Personal Data

Born April, 1979
Email: kenneth@hexad.dk
Homepage: www.hexad.dk

Education

2000, Electrician, Technical College Hillerød, Denmark
2003, College equivalent (Højere forberedelseseksamen), Gentofte HF, Denmark
2008, Bachelor, Computer Science, University of Copenhagen, Denmark
2010, Master of Science, Computer Science, University of Copenhagen, Denmark
2013, PhD, Computer Science, University of Copenhagen, Denmark

Employment history

1999-2000 Freelance, working on commercial ERP system
2000-2003 Self employed working on warehouse management system
2003-2006 Self employed, primarily work on GIS systems for GEOGRAF A/S
2006-2010 Employed by GEOGRAF A/S, various GIS systems
2010-2013 PhD Student, University of Copenhagen
2013-2018 PostDoc, University of Copenhagen
2018-2019 PostDoc, MAX IV, University of Lund (50% employment)
2018-2021 Assistant Professor, University of Copenhagen
2021-2023 Tech Lead, Story House Egmont
2023-2024 Developer, Alipes Capital
2024- CTO, Duplicati Inc

Founded Open Source Projects

2006-2010 MapGuide Maestro (MapGuide management application)
2007-2010 DSMCBE (Distributed shared memory for Cell BE)
2008- Duplicati (Efficient and easy to use backup system)
2015-2021 CoCoL: Concurrent Communications Library for C#
2016-2023 Ceenhttpd: Standard compliant non-blocking C# webserver

Grants

2014-2017 Industrial PostDoc with InnovationsFonden, Fiberblaze and Niels Bohr Institute

Teaching Experience

2009 Teaching assistant for “IT Security” (Bachelor), UCPH
2009 Partial course-lecturer for “Computer Networks” (Bachelor), UCPH
2010 Partial course-lecturer for “Computer Networks” (Bachelor), UCPH
2010 Partial course-lecturer for “Principles of Computer System Design”, (Master) UCPH
2014 Course-lecturer for “Computer Networks” (Bachelor, 130 students), UCPH
2015 Course-lecturer for “Computer Networks” (Bachelor, 150 students), UCPH
2018 Course-lecturer for “Concurrent and Distributed Computing”, (Master, 10 students) UCPH
2020 Course-lecturer for “High Performance Programmering og Systemer”, (Bachelor, 66 students) UCPH

Completed Student Supervision

7 Phd students
17 Master thesis
24 Bachelor projects
14 Practical projects

Other Positions

2020-2021 PRACE-6IP (Partnership for Advanced Computing in Europe) Management board member
2020-2021 MUMMERING (International Training Network) Executive Committee member
2020-2021 EuroCC (from EuroHPC Joint Undertaking) Competence mapping WP lead
2020-2021 AXIS (Adaptive X-ray inspection system) InnovationFund Denmark, steering committee chair
2020-2021 Information Security Management System (ISMS) HPC Lead

Startup and Business Experience

2012-2019 Mikken Digital: App development, own titles, consulting, and customer apps (founder, director, and lead developer)
2014-2016 Easy Play TV: Smart TV and digital media platform (founder, director, and tech lead)
2018-2023 BrygBrygBryg: Craft beer production (founder, director, brewer)
2024- Duplicati Inc (founder, CTO)

Technology experience

Programming languages: C# (20+ years), Python (10+ years), C (10+ years), C++ (8+ years), Visual Basic (6+ years), Java (5+ years), VHDL (5+ years), x86 assembly language (3+ years), MIPS assembly language (2+ years), CUDA (2+ years), Go, Rust, Haskel, occam, F#, Chapel, LUA (1+ years)

Programming paradigms: Object oriented programming, imperative programming (20+ years), threaded programming (15+ years), channel-based multi-programming (10+ years), concurrent programming (10+ years), dataflow programming (10+ years), distributed systems, MPI (8+ years), hardware design (5+ years), functional programming (2+ years)

Cloud based (2-10 years): AWS - s3, ec2; Google - GAE, Firestore; Digital Ocean - virtual servers, storage; Azure - AKS, AppInsights, Cosmos, hosted MSSQL, B2C, blob storage

Data science / big data (2-10 years): NumPy, SciPy, Jupyter, MapReduce, MPI, TensorFlow

Relational datases (2-15 years): MSSQL, Sqlite, MariaDb, Postregres

NoSQL databases (2-8 years): Firebase, Cosmos, SOFA

Frontend (2-6 years): AngularJS, Angular2-14, Vue, jQuery, SASS, Less, Apollo

App development (published apps): Corona SDK, Titanium, Xamarin

Operating systems w. shipped applications: MacOS, Linux (many distros), Windows, Android, iOS, BSD (OpenBSD + FreeBSD)

Network protocols with teaching and/or implementation experience: HTTP(S), SSH, gRPC, FTP, NFS, SMTP, IMAP, POP3, DNS

Methodologies: Scrum, Clean code, SOLID, Domain Driven Design (DDD), Zero Trust Design, Trust-No-One design, Hexagonal Architecture

Other, by keyword: Git, Docker, Communicating Sequential Processes (CSP), Erlang, Concurrent programs, Blazor, GraphQL, Kubernetes, ORM, Transpilation, Clocked Circuits, Chip design, Computer Architecture, Common Intermediate Language (CIL), FUSE, SSH, Verilog, Xilinx Vivado, x-rays, tomography, protein folding, fluid simulations, blockchain, machine learning, Shopify, Wordpress, ActiveX

Publications

M. N. Larsen, K. Skovhede and B. Vinter: “Distributed Shared Memory for the Cell Broadband Engine”, in proc of ISPDC 2009

K. Skovhede, M. N. Larsen and B. Vinter: “Extending distributed shared memory for the cell broadband engine to a channel model”, Applied Parallel and Scientific Computing 2011

K. Skovhede, M. N. Larsen and B. Vinter: “Programming the CELL-BE using CSP”, Communicating Process Architectures 2011

K. Skovhede and B. Vinter: “NumCIL: Numeric Operations In the Common Intermediate Language”, Journal of Next Generation Information Technology 2013

K. Skovhede: “Combining High Performance with High Productivity on Commodity Hardware”, Niels Bohr Institute, March 2013

M. Rehr, K. Skovhede and B. Vinter: “BPU Simulator”, CPA 2013 - The 35th WoTUG conference on concurrent and parallel programming, 25-28 August 2013, Edinburgh, Scotland.

S. A. F. Lund, K. Skovhede, M. R. B. Kristensen, and B. Vinter: ”Doubling the Performance of Python/NumPy with less than 100 SLOC”, PyHPC'2013, 16-22 November 2013, Colorado, Denver

M. R. B. Kristensen, S. A. F. Lund, T. Blum, K. Skovhede, and B. Vinter: "Bohrium: Unmodified NumPy Code on CPU, GPU, and Cluster", PyHPC'2013, 16-22 November 2013, Colorado, Denver

B. Vinter and K.Skovhede: “Synchronous Message Exchange for Hardware Designs”, CPA 2014 - The 36th WoTUG conference on concurrent and parallel programming, 24-27 August 2014, Oxford, UK

M. R. B. Kristensen, S. A. F. Lund, T. Blum, K. Skovhede and B. Vinter: “Bohrium: a virtual machine approach to portable parallelism”, 2014 IEEE 28th International Parallel & Distributed Processing Symposium Workshops, 19-23 May 2014, Phoenix, USA

M.R.B. Kristensen, S.A.F. Lund, T. Blum and K. Skovhede: “Separating NumPy API from Implementation”, PyHPC 2014 - 4th Workshop on Python for High Performance and Scientific Computing, At Ernst N. Morial Convention Center, 900 Convention Center Blvd, New Orleans, LA, United States

B. Vinter, M. R. B. Kristensen, S. A. F. Lund, T. Blum and K. Skovhede “Prototyping for Exascale”, Exascale Applications and Software Conference, Edinburgh, Scotland

K. Skovhede and B. Vinter: “CoCoL: Concurrent Communications Library”, CPA 2015 - The 37th WoTUG conference on concurrent and parallel programming, 23-26 August 2015, University of Kent, England

B. Vinter and K. Skovhede: “Bus Centric Synchronous Message Exchange for Hardware Designs”, CPA 2015 - The 37th WoTUG conference on concurrent and parallel programming, 23-26 August 2015, University of Kent, England

K. Skovhede and B. Vinter: “Extensions to the Concurrent Communications Library”, Communicating Process Architectures 2016 - WoTUG-38, 22-23 August 2016, University of Copenhagen, Denmark

T. Asheim, K. Skovhede and B. Vinter: “VHDL Generation From Python Synchronous Message Exchange Networks”, Communicating Process Architectures 2016 - WoTUG-38, 22-23 August 2016, University of Copenhagen, Denmark

B. Vinter, M. O. Larsen, and K. Skovhede: “Broadcasting in CSP-Style Programming”, Communicating Process Architectures 2016 - WoTUG-38, 22-23 August 2016, University of Copenhagen, Denmark

K. Skovhede and B. Vinter: “Building hardware from C# models”, Third International Workshop on FPGAs for Software Programmers (FSP 2016), 29-31 August 2016, Lausanne, Switzerland

K. Skovhede and B. Vinter: “Big Data Analysis with Skeletons on SOFA”, Communicating Process Architectures 2017 - WoTUG-39, 20-23 August 2017, University of Malta, Malta

K. Skovhede and B. Vinter: “C++ support for better hardware/software co-design in C# with SME”, Fourth International Workshop on FPGAs for Software Programmers (FSP 2017), 4-8 August 2017, Ghent, Belgium

K. Skovhede and B.Vinter: “Evaluating CSP as a Programming Model to Build Distributed Systems”, Communicating Process Architectures 2018 - WoTUG-40, 19-22 August 2018, Faculty of Computer Science, Technische Universität Dresden, Germany.

C.-J. Johnsen, K. Skovhede, B. Vinter, L. O'Brien Quarrie, and L. J. Dickson: “Implementing a Transputer for FPGA in Less Than 800 Lines of Code”, Communicating Process Architectures 2018 - WoTUG-40, 19-22 August 2018, Faculty of Computer Science, Technische Universität Dresden, Germany.

A. Thegler, M. O. Larsen, K. Skovhede and B. Vinter: "Towards Automatic Program Specification Using SME Models", Communicating Process Architectures 2018 -

WoTUG-40, 19-22 August 2018, Faculty of Computer Science, Technische Universität Dresden, Germany.

D. Marchant, C.J. Johnsen, B. Vinter, & K. Skovhede: "Teaching Concurrent and Distributed Programming With Concepts Over Mathematical Proofs", 2019 IEEE/ACM Workshop on Education for High-Performance Computing (EduHPC), November 17th 2019, Colorado Convention Center, Denver, Colorado.

A. Thegler, C.J. Johnsen, K. Skovhede & B. Vinter: “Accelerating Molecular Dynamics with the Lennard-Jones potential for FPGAs”, 2021 IEEE Concurrent Processes Architectures and Embedded Systems (COPA), April 28th 2021, San Diego (Virtual Conference)

M. Broløs, C.J. Johnsen & K. Skovhede: “Occam to Go translator” COPA, 2021 IEEE Concurrent Processes Architectures and Embedded Systems (COPA), April 28th 2021, San Diego (Virtual Conference)