

# VIVEK SHAH

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## EDUCATION

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- Ph.D., Computer Science (Database Systems)** Apr 2013 – Jul 2017  
University of Copenhagen Denmark  
Dissertation: *Exploration of a Vision for Actor Database Systems*  
Advisors: Marcos Antonio Vaz Salles and Fritz Henglein
- Master of Science, Computer Science** Aug 2010 – Nov 2012  
University of Copenhagen Denmark  
Specialization: Programming Language and Systems  
Dissertation: *Adaptive Auto-Partitioning in Distributed Transaction based Data Storage Models*
- Master of Science, Computer Science** Aug 2011 – Feb 2012  
ETH Zurich Switzerland  
Semester exchange with University of Copenhagen (Erasmus Exchange Program)
- Bachelor of Technology, Computer Science & Engineering** Aug 2004 – Jun 2008  
National Institute of Technology (NIT), Hamirpur India  
Dissertation: *A Protocol for Secure and Fast Message Exchange in P2P Networks*

## APPOINTMENTS

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- University of Copenhagen** Nov 2017 - Oct 2019  
*Postdoctoral Researcher* Denmark
- University of Copenhagen** Apr 2013 – Jul 2017  
*Ph.D. Fellow* Denmark
- Microsoft Research** Jun 2015 – Sep 2015  
*Research Intern* Redmond, USA  
Manager: Philip A. Bernstein
- Belzabar Software Design** Aug 2008 – Jul 2010  
*Computer Scientist & Deputy Team Lead* New Delhi, India  
Manager: David Bodnick
- Tata Institute of Fundamental Research (HBCSE)** May 2007 – Jul 2007  
*Research Intern* Mumbai, India  
Manager: Nagarjuna G.

## PUBLICATIONS

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### Refereed

- **Vivek Shah** and Marcos Antonio Vaz Salles. "Reactors: A Case for Predictable, Virtualized Actor Database Systems". In Proceedings of the 2018 ACM International Conference on Management of Data (**SIGMOD**), Houston, USA.
- Phil Bernstein, Sebastian Burckhardt, Sergey Bykov, Jose Faleiro, Gabriel Klot, Alok Kumbhare, Muntasir Raihan Rahman, **Vivek Shah**, Adriana Szekeres and Jorgen Thelin. "Geo-Distribution of Actor-Based Services". In Proceedings of the 2017 ACM International Conference on Object-oriented Programming Systems Languages and Applications (**OOPSLA**), Vancouver, Canada.
- Vivek Shah. "Transactional Partitioning: A New Abstraction for Main-Memory Databases". In Proceedings of 2014 Very Large Databases (**VLDB**) PhD workshop, Hangzhou, China. **Awarded best paper runner-up**

### Technical Reports

- **Vivek Shah** and Marcos Antonio Vaz Salles. "Actor-Relational Database Systems: A Manifesto". Pre-print available at CoRR abs/17707.06507. *Under Review*
- **Vivek Shah** and Marcos Antonio Vaz Salles. "An Evaluation of Intra-Transaction Parallelism in Actor-Relational Database Systems." *Under Preparation*

## AWARDS AND HONORS

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- Awarded best paper runner up at VLDB 2014 Ph.D. workshop in Hangzhou, China.
- Awarded Computer Science (DIKU) Departmental Fellowship for Ph.D. studies at University of Copenhagen.
- Awarded Danish Governmental Scholarship for M.Sc. studies at University of Copenhagen.
- Awarded Erasmus scholarship for exchange studies at ETH Zurich.
- Secured second rank in the Department of Computer Science, National Institute of Technology (NIT), Hamirpur on completion of undergraduate studies (B.Tech).

## CURRENT RESEARCH PROJECTS

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- **REACTDB** is a scalable high-performance database system that targets modern multi-core hardware and enhances their programmability by integrating the concepts of actor programming model and relational data model. My Ph.D. dissertation developed the *vision* for the project and built the *system* from ground up for high performance. Multiple research directions are currently being pursued in the project where the design of classical database system components e.g., concurrency control, logging, index-management, distribution and cloud deployment are being redesigned in light of the integration.
- **Microsoft Orleans** is a distributed, elastic, fault-tolerant virtual actor run-time designed to build scalable, stateful applications in .NET. My research internship at Microsoft Research helped in adding support for *geo-distribution in Orleans* by augmenting it with replication and mutual exclusion protocols.
- **Snapper** is a work in progress library designed to provide drop-in support for ACID transactions across remote procedure calls in virtual actor run-times while guaranteeing performance and scalability by leveraging application semantics.
- **Dolphin** is a work in progress scalable *actor-oriented database* augmented with spatial and reactive programming capabilities designed to aid construction of elastic, fault-tolerant location based moving object applications.

## TEACHING & MENTORING EXPERIENCE

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### Teaching Roles at University of Copenhagen

- **Computer Systems**, *Co-lecturer* Fall 2016 – 2018
- **Advanced Java**, *Co-lecturer* Fall 2013 – 2018
- **Advanced Computer Systems**, *Teaching Assistant* Fall 2013 – 2016
- **Advanced Algorithms and Data-structures**, *Teaching Assistant* Spring 2012
- **Algorithms and Data-structures**, *Teaching Assistant* Spring 2012
- **Databases and Web-programming**, *Teaching Assistant* Spring 2011

### Mentoring Roles at University of Copenhagen

Co-supervised 7 M.Sc. thesis students and 4 B.Sc. thesis students in the area of database systems.

## SERVICE & LEADERSHIP

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- External Reviewer for SIGMOD 2015, IEEE eScience 2014, PACT 2015.
- Fedora Package Maintainer. 2008 – 2010
- Member, GNU/Linux User Group, NIT Hamirpur. 2006 – 2008
- Core Coordinator, Nimbus, Annual Technical Festival, NIT Hamirpur. 2007
- Editor, Srijan, Annual University Magazine, NIT Hamirpur. 2006 – 2007
- Coordinator, Hillffair, Annual Cultural Festival, NIT Hamirpur. 2006 – 2007

## LANGUAGES

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English - Fluent; Hindi, Bengali - Native; German, Danish - Beginner

## REFERENCES

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Available upon request.