

# Christian Kroer

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## PERSONAL INFORMATION

Christian Kroer  
Computer Science Department  
Carnegie Mellon University  
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Immigration status: Green card holder

## RESEARCH INTERESTS

*Fields:* artificial intelligence, algorithms, economics, operations research.

*Specific:* equilibrium computation, mechanism design, auctions, prediction markets, combinatorial optimization, convex optimization, machine learning, and practical applications of all the above.

## EDUCATION

### Carnegie Mellon University

*Ph.D. Computer Science*

May 2012 –

### IT University of Copenhagen

*M.Sc. IT - Software Development and Technology*

August 2009 – April 2012

### Aalborg University, Aalborg, Denmark

*BA. Human-centered informatics*

September 2006 – June 2009

## EMPLOYMENT AND INTERNSHIPS

**Facebook, Economics and Computation Group**, *Research intern.*

May 2016 – August 2016

**Carnegie Mellon University**, *Research assistant.*

May 2012 –

**Microsoft Research New York**, *Research intern.*

May 2015 – August 2015

**Aalborg University**, *Research assistant.*

February 2012 – April 2012

**IT University of Copenhagen**, *Teaching assistant.*

September 2011 – June 2012

**Netmester A/S**, Copenhagen, Denmark, *Systems developer.*

January 2010 – August 2011

## HONORS AND AWARDS

Facebook Fellowship in Economics and Computation, 2016.

## PUBLICATIONS

**Sequential planning for steering immune system adaptation.** Christian Kroer and Tuomas Sandholm. *International Joint Conference on Artificial Intelligence, (IJCAI)*, 2016.

**Faster First-Order Methods for Extensive-Form Game Solving.** Christian Kroer, Kevin Waugh, Fatma Kılınç-Karzan, and Tuomas Sandholm. *ACM Conference on Economics and Computation, (EC)*, 2015.

**Limited Lookahead in Imperfect-Information Games.** Christian Kroer and Tuomas Sandholm. *International Joint Conference on Artificial Intelligence, (IJCAI)*, 2015.

**Discretization of Continuous Action Spaces in Extensive-Form Games.** Christian Kroer and Tuomas Sandholm. *International Conference on Autonomous Agents and Multiagent Systems*, (AAMAS), 2015.

**Computational Bundling for Auctions.** Christian Kroer and Tuomas Sandholm. *International Conference on Autonomous Agents and Multiagent Systems*, (AAMAS), 2015. A longer version was released as a CMU tech report.

**Extensive-form Game Abstraction with Bounds.** Christian Kroer and Tuomas Sandholm. *ACM Conference on Economics and Computation*, (EC), 2014.

**Power Napping with Loud Neighbors: Optimal Energy-Constrained Jamming and Anti-Jamming.** Bruce DeBruhl, Christian Kroer, Anupam Datta, Tuomas Sandholm, and Patrick Tague *7th ACM Conference on Security & Privacy in Wireless and Mobile Networks*, (WiSec), 2014.

**Symbolic Configuration for Interactive Container Ship Stowage Planning.** Christian Kroer, Martin K. Svendsen, Rune M. Jensen, Joseph Kiniry, and Eilif Leknes. *Computational Intelligence*, 2014.

**Robust Optimization of Recommendation Sets with the Maximin Utility Criterion.** Paolo Viggiani and Christian Kroer. *3rd International Conference on Algorithmic Decision Theory*, (ADT). 2013. Previously appeared at *6th Multidisciplinary Workshop on Advances in Preference Handling*, (ECAI Workshop). 2012.

**Automated Planning for Liner Shipping Fleet Repositioning.** Kevin Tierney, Amanda Coles, Andrew Coles, Christian Kroer, Adam Britt and Rune M. Jensen. *International Conference on Automated Planning and Scheduling*, (ICAPS). 2012.

**Feature Filtering for Instance Specific Algorithm Configuration.** Christian Kroer and Yuri Malitsky. *IEEE International Conference on Tools in Artificial Intelligence*, (ICTAI). 2011.

#### INVITED TALKS

Faster First-Order Methods for Extensive-Form Game Solving. INFORMS Annual Conference, 2015.

Faster First-Order Methods for Extensive-Form Game Solving. 22nd International Symposium on Mathematical Programming (ISMP), 2015.

Computational Bundling for Auctions. INFORMS Annual Conference, 2013.

#### OTHER TALKS

Abstraction and convex optimization in sequential game solving. CMU graduate AI class, 2016.

Discretization of Continuous Action Spaces in Extensive-Form Games. INFORMS Annual Conference, 2015.

Sequential game solving overview. CMU undergrad AI class, 2014.

Extensive-Form Game Abstraction with Bounds. CMU theory lunch, 2014.

Extensive-Form Game Abstraction with Bounds. CMU open house, 2014.

## TEACHING EXPERIENCE

CMU	2016	Electronic Negotiation	Graduate	Vertical mentor
CMU	2016	Graduate Artificial Intelligence	Graduate	TA
CMU	2015	Electronic Negotiation	Graduate	Vertical mentor
CMU	2014	Artificial Intelligence	Undergraduate	TA ( <b>nominated for teaching award</b> )
CMU	2014	Electronic Negotiation	Graduate	Vertical mentor
ITU	2012	Intelligent Systems Programming	Graduate	TA
ITU	2011	Algorithm Design	Graduate	TA

## COMMUNITY SERVICE

IJCAI 2016, program committee.  
 INFORMS 2015, chair, sponsored session, “Efficient Algorithms for Large-Scale Convex Games.”  
 CMU Computer Science PhD program admissions committee 2014-2015, 2015-2016.  
 CMU Immigration Course coordinator 2013.

Reviewing: ICML 2016, WINE 2015, JAAMAS 2015, 2016, ACM Transactions on Economics and Computation, 2013, 2014, Transactions on Computational Intelligence and AI in Games 2014, 2015.

## PROGRAMMING

Strong experience: Java, Python, C++, C#.  
 Medium experience: SQL, Matlab, Scala, C, HTML, CSS.  
 Familiar with: R, Lua, XSLT.

## FRAMEWORKS

Extensive UNIX and Windows development experience. Git, SVN, pandas, numpy, CPLEX, Gurobi, scikit-learn, XGBoost, .Net.

## REFERENCES

Tuomas Sandholm  
 Professor of Computer Science  
 Carnegie Mellon University  
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Sébastien Lahaie  
 Senior Researcher  
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