

RAMACHANDRA KOTA

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PROFILE OVERVIEW

- Over **7 years of professional experience** in Artificial Intelligence, Machine Learning, Smart Grid and IoT.
- Published **21 papers** in top-rated conferences, journals & workshops in AI, Machine Learning & Energy.
- Co-inventor of **2 granted patents** and **5 patents pending** in USPTO related to AI, IoT and Blockchain.
- **Project Lead** on several research collaborations with industrial clients and academic partnerships.
- Served on the **program committee** for IJCAI, AAMAS, IEEE TSG, IEEE TSE, IEEE TPDS, KAIS, IEEE SGC, etc.
- Proficient in Java, C/C++, Python, R, Spark, SQL, Shell scripting, and AWS technologies.

WORK EXPERIENCE

REALTOR.COM (MOVE, INC.)

OCT 2017 - CURRENT

Staff Data Scientist, Data Science Team

Vancouver, Canada

Designing data-driven approaches focused on improving user/customer retention and revenue growth.

- **Adaptive Lead Allocation:** Developing learning-based methods for matching enquiries from website users seeking realtors with the most compatible agents and brokers on the platform. Using market forecasting techniques and user behaviour modelling to achieve efficient allocation.

IBM RESEARCH

DEC 2014 – JUL 2017

Research Scientist, Cognitive IoT Solutions

Bangalore, India

Led client engagements and research initiatives with the underlying theme of applying Artificial Intelligence and Big-Data Analytics for Cyber-Physical Systems.

- **Connectivity Models (CM):** Technical coordinator for an engagement with DTE Energy, USA on inference and correction of the network connectivity of distribution grids using geospatial and electrical data.
 - Designed learning and optimization based algorithms that improved accuracy by **40%**.
 - Implemented the proven solutions as a software application that was deployed at the client premises. The prototype application has now been included in the energy solutions offered by IBM.
- **Conversational Systems:** HCI oriented research project focusing on UI enhancements for utility chatbots.
 - Built a tool on IBM Watson Conversation Service for generating data-driven, dynamic UI for chatbots.
 - Conducted a user-study on the design and usability of the popular Facebook Messenger chatbots.
- **Renewable Energy Forecasting:** Led a research project on prediction of solar irradiance and power generation of solar plants in India based on weather forecast models and historical measurements.
 - Developed ensemble methods to fuse forecasts of distinct weather models with localized data.
 - Devised a data-driven solar irradiance model that boosted prediction accuracy by **50%**.
- **OPTi Project:** Head of a 4-member team in the **€ 2M** EU project on District Heating & Cooling Systems.
 - Built domain-aware learning approaches to model energy consumption in DHC networks.
 - Coordinated the experiments and validation tests across the pilot sites in Sweden and Spain.
- Awarded IBM's **Outstanding Technical Achievement Award** (OTAA) for contribution to the CM project.
- Awarded **2 Team Accomplishments** by IBM for *Customer Offering & Accelerated Market Introduction*.

SHOWT (FORMERLY GLOBAL STEALTHCO)

JUL 2014 - DEC 2014

Principal Scientist

Hyderabad, India

Showt is an Internet startup headquartered in Hong Kong with team members distributed around the world.

Worked on the AI and Data Science aspects of the product – a worldwide voting platform.

- Developed the search ranking functionality based on user behaviour and externally scraped data.
- Designed and led the development of features such as real-time trend analysis and summarization.

SECURE METERS (UK) LTD.

FEB 2010 - APR 2012

Research Engineer

Winchester, UK

Secure Meters Ltd. is a leading MNC providing smart solutions for energy measurement and management.

Worked with the top management (CTO & Chief Scientist) at Secure Meters on new R&D initiatives to apply AI, Machine Learning & Multi-Agent systems to drive innovation and build in-house expertise in Smart Grid.

- **Company Liaison:** Was the sole representative of the company on two academic-industrial projects.
- **iDEaS Project** – An engagement worth **£ 1M** with University of Southampton focusing on decentralized control, operation and efficient management of future generation electricity networks and smart homes.
- **Orchid** – A UK Govt. project worth **£ 5.5M** involving Universities of Oxford, Nottingham, Southampton, and BAE Systems to develop multi-disciplinary approaches for the domains of disaster response and smart grid.

UNIVERSITY OF SOUTHAMPTON

FEB 2010 - JAN 2014

Visiting Research Fellow, Agents, Interactions & Complexity Research Group

Southampton, UK

Collaborated with university researchers on the iDEaS and Orchid projects with Secure Meters Ltd.

- **Automated Home Energy Management System:** Developed a testbed for optimizing energy usage of HVAC systems based on thermal-loss modelling, localized weather, and user preferences.
- **Game-theoretic Energy Solutions:** Designed pricing mechanisms for formation and operation of cooperatives of small renewable producers, storage providers (like EVs), and consumers in energy markets.

EDUCATION**PhD, COMPUTER SCIENCE**

UNIVERSITY OF SOUTHAMPTON, UK

Advisors: Prof. Nick Jennings & Dr. Nick Gibbins

2006 - 2009

Thesis: 'Self-Adapting Agent Organisations'**Focus:** Artificial Intelligence

- Focused on self-organisation in Multi-Agent Systems and proposed decentralized adaptation methods for task-oriented agent networks. Application domains include grid computing and autonomic systems.
- Nominated for **best student paper award** at AAMAS '09 (top 5 out of 700+ submissions).

B.TECH (HONS), COMPUTER SCIENCE & ENGINEERING

IIIT HYDERABAD, INDIA

CGPA: 8.97/10

2002 - 2006

- Led the university team *Kshitij* in RoboCup 2005 (*Rescue Simulation League*) held at Osaka, Japan and secured **3rd position**. RoboCup is an annual international event promoting research in Robotics. We were the only Indian team among the 30 university teams from across the world that qualified to the league.
- Represented the university in *ACM Inter-Collegiate Programming Contest, Asia Regional* in 2005.

PATENTS GRANTED

- Samarth Bharadwaj, Ramachandra Kota, Pankaj Dayama, Shivkumar Kalyanaraman, and Pratyush Kumar (2017). *Cloud Coverage Estimation by Dynamic Scheduling of a Distributed Set of Cameras*. US 20170351006 A1. Publication Date: 2017/12/7.
- Vijay Arya, Sambaran Bandyopadhyay, Ramachandra Kota, and Rajendu Mitra (2017). *Cartographic Data Using Utility Data*. US 20170199042 A1. Publication date: 2017/07/13.

PATENTS PENDING (AT USPTO)

- Mohit Jain, Ramachandra Kota, and Pratyush Kumar. *Data-Driven Adaptive Interface for Conversational Systems*. US Application: 15/481291, filed: 2017/04/06.
- Ramachandra Kota, Sampath Dechu, and Sambaran Bandyopadhyay. *Dynamic Pricing of Energy Consumed from a Shared Battery Using Real-Time Consumption Data*. US Application: 14/993426, filed: 2016/01/12.
- Ramachandra Kota, Sambaran Bandyopadhyay, Mohit Jain, Rajendu Mitra, and Vijay Arya. *Identifying and Prioritizing Errors in Connectivity Models of Distribution Networks for Efficient Field Inspections*. US Application: 15/097820, filed: 2016/04/13.
- Sampath Dechu, Ramachandra Kota, and Pratyush Kumar. *Autonomous Peer-to-Peer Energy Networks Operating on a Blockchain*. US Application: 15/348810, filed: 2016/11/10.
- Sampath Dechu, Ramachandra Kota, and Pratyush Kumar. *Proof-Of-Work For Smart Contracts On A Blockchain*. US Application: 15/334728, filed: 2016/10/26.

PUBLICATIONS

- Mohit Jain, Ramachandra Kota, Pratyush Kumar, and Shwetak N. Patel (2018). *Convey: Exploring the Use of a Context View for Chatbots*. In: CHI Conference on Human Factors in Computing Systems (**CHI '18**), 21-26 April 2018, Montreal, Canada.
- Mohit Jain, Pratyush Kumar, Ramachandra Kota, and Shwetak N. Patel (2018). *Evaluating and Informing the Design of Chatbots*. In: Conference on Designing Interactive Systems (**DIS '18**), 9-13 June 2018, Hong Kong.
- Kartik Palani, Ramachandra Kota, Amar Prakash Azad, and Vijay Arya (2017). *Blue Skies: A Methodology for Data-Driven Clear Sky Modelling*. In: 26th International Joint Conference on Artificial Intelligence (**IJCAI '17**), 19-25 August 2017, Melbourne, Australia.
- Valentin Robu, Georgios Chalkiadakis, Ramachandra Kota, Alex Rogers, and Nicholas R. Jennings (2016). *Rewarding cooperative virtual power plant formation using scoring rules*. In: **Energy**, 117, (1), 19-2.
- Ramachandra Kota, Vijay Arya, and Daniel Bowden (2016). *Inferring Non-Outage Events Using Meter Voltage Data*. In: ACM International Conference on Future Energy Systems (**e-Energy '16**), 21-24 June 2016, Waterloo, Canada.

- Anamitra R Choudhury, Ramachandra Kota, Sampath Dechu, and Sambaran Bandyopadhyay (2016). *Supply Scheduling and Usage-Based Pricing for Shared Storage in Adaptive Dynamic Islanding*. In: ACM International Conference on Future Energy Systems (**e-Energy '16**), 21-24 June 2016, Waterloo, Canada.
- Rajendu Mitra, Ramachandra Kota, Sambaran Bandyopadhyay, Vijay Arya, Brian Sullivan, Richard Mueller, Heather Storey, and Gerard Labut (2015). *Voltage Correlations in Smart Meter Data*. In: ACM International Conference on Knowledge Discovery and Data Mining (**KDD '15**), 10-13 August 2015, Sydney, Australia.
- Sambaran Bandyopadhyay, Ramasuri Narayanam, Ramachandra Kota, Pg Dr Mohammad Iskandarbin Pg Hj Petra, and Zainul Charbiwala (2015). *Aggregate Demand-Based Real-Time Pricing Mechanism for the Smart Grid: A Game-Theoretic Analysis*. In: 24th International Joint Conference on Artificial Intelligence (**IJCAI '15**), 25-31 July 2015, Buenos Aires, Argentina.
- Sambaran Bandyopadhyay, Ramachandra Kota, Rajendu Mitra, Vijay Arya, Brian Sullivan, Richard Mueller, Heather Storey, and Gerard Labut (2015). *Machine Learning for Inferring Phase Connectivity in Distribution Networks*. In: IEEE International Conference on Smart Grid Communications (**SGC '15**), 2-5 November 2015, Miami, USA.
- Matteo Vasirani, Ramachandra Kota, Renato L.G. Cavalcante, Sascha Ossowski, and Nicholas R. Jennings (2013). *An Agent-Based Approach to Virtual Power Plants of Wind Generators and Electric Vehicles*. In: **IEEE Transactions on Smart Grid**, 4, (3), 1314-1322
- Ramachandra Kota, Georgios Chalkiadakis, Valentin Robu, Alex Rogers, and Nicholas R. Jennings (2012). *Cooperatives for Demand Side Management*. In: The 20th European Conference on Artificial Intelligence (**ECAI '12**), 27-31 August 2012, Montpellier, France.
- Valentin Robu, Ramachandra Kota, Georgios Chalkiadakis, Alex Rogers, and Nicholas R. Jennings (2012). *Cooperative Virtual Power Plant Formation Using Scoring Rules*. In: The 26th AAI Conference on Artificial Intelligence (**AAAI '12**), 22-26 July 2012, Toronto, Canada.
- Ramachandra Kota, Nicholas Gibbins, and Nicholas R. Jennings (2012). *Decentralised Approaches for Self-Adaptation in Agent Organisations*. In: **ACM Transactions on Autonomous and Adaptive Systems**, 7, (1), 1-28.
- Matteo Vasirani, Ramachandra Kota, Renato L.G. Cavalcante, Sascha Ossowski, and Nicholas R. Jennings (2011). *Using Coalitions of Wind Generators and Electric Vehicles for Effective Energy Market Participation*. In: The 10th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS '11**), 2-6 May 2011, Taipei, Taiwan.
- Georgios Chalkiadakis, Valentin Robu, Ramachandra Kota, Alex Rogers, and Nicholas R. Jennings (2011). *Cooperatives of Distributed Energy Resources for Efficient Virtual Power Plants*. In: The 10th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS '11**), 2-6 May 2011, Taipei, Taiwan.
- Archie Chapman, Rosa Anna Micillo, Ramachandra Kota, and Nicholas R. Jennings, (2010). *Decentralised Dynamic Task Allocation Using Overlapping Potential Games*. In: **The Computer Journal**, 53 (9), 1462-1477.
- Ramachandra Kota, Nicholas Gibbins, and Nicholas R. Jennings (2009). *Self-Organising Agent Organisations*. In: The 8th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS '09**), 10-15 May 2009, Budapest, Hungary.

- Archie Chapman, Rosa Anna Micillo, Ramachandra Kota, and Nicholas R. Jennings, (2009). *Decentralised Dynamic Task Allocation: A Practical Game-Theoretic Approach*. In: The 8th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS '09**), 10-15 May 2009, Budapest, Hungary (*nominated for the **Best Student Paper Award***).
 - Ramachandra Kota, Nicholas Gibbins, and Nicholas R. Jennings (2009). *A Generic Agent Organisation Framework For Autonomic Systems*. In: The 3rd International ICST Conference on Autonomic Computing and Communication Systems (**Autonomics '09**), 9-11 Sep, Limassol, Cyprus.
 - Ramachandra Kota, Nicholas Gibbins, and Nicholas R. Jennings (2008). *Decentralised structural adaptation in agent organisations*. In: Workshop on Organised Adaptation in Multi-Agent Systems (**OAMAS**) at AAMAS '08, Estoril, Portugal.
 - Vidit Bansal, Ramachandra Kota, and Kamalakar Karlapalem (2007). *System Issues in Multi-agent Simulation of Large Crowds*. In: 8th International Workshop on Multi-Agent-Based Simulation (**MABS**) at AAMAS '07, Honolulu, USA.
 - Ramachandra Kota, Vidit Bansal, and Kamalakar Karlapalem (2006). *System Issues in Crowd Simulation using Massively Multi-Agent Systems*. In: 2nd International Workshop on Massively Multi-Agent Systems (**MMAS**) at AAMAS '06, Hakodate, Japan.
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