V. L. Raju Chinthalapati

Contact Information

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Nationality

British

Research Interests

- Financial Technologies
- Agent-based Models
- Complexity Theory
- Hypergraphs
- Quantitative & Computational Finance
- Behavioral Decision Theory
- Big Data Analytics and Data Science

❑ Main aim of my research is to bring a more scientific approach to social science research (particularly to finance and economics) using cutting-edge methods and technologies. Digitalization of finance brings rich data sets. Data is the new oil that is used to drive the future for banking and finance. Part of my research is related to big data analytics in finance. The outcomes of my research related to big data in finance helps us in understanding market microstructure, information asymmetry, liquidity risk and stability of financial markets. In addition to that, my research interests in the generation of artificial relations, in the stock market and elsewhere, by means of a variety of tools ranging from agent-based models to behavioral algorithms, as well as in the observation and representations of relations by means of, among other things, hypergraphs. Further, my research on machine learning applications in finance democratise the investment analytics that helps 1) automating portfolio management and 2) creating Robo-advisors.

Education

PG Cert in HE- University of Greenwich

Ph.D. (Financial Mathematics)- The London School of Economics and Political Science

Ph.D. (Computer Science)- Indian Institute of Science, Bangalore

M.S. (Mechanical Engg.)- Indian Institute of Science, Bangalore

B.S. (Mechanical Engg.)- Nagarjuna University, India

Employment

❑ Department of Computing, Goldsmiths, University of London — Dec 2019 -
Position : Reader (Financial Technologies)

❑ Southampton Business School, University of Southampton — Dec 2018 - Dec 2019
Position : Lecturer (Finance)

❑ Department of Informatics, King's College London — Oct 2018 - Sep 2019
Position : Visiting Lecturer (Computational Finance)

❑ AlixPartners, London — Sep 2017 - Mar 2019
Position : Independent Consultant on quantitative/computational economics.

- ❑ University of Greenwich — July 2009 - Nov 2018
  Position : Senior Lecturer (Finance)

- ❑ Deutsche Bank, London — Jan 2008 - Jan 2009
  Position : Researcher, FX Strategy Research.

- ❑ London School of Economics — Sep 2004 - April 2008
  Position : Guest Teacher.

- ❑ London Business School — July - Aug 2004
  Position : Research Assistant.

- ❑ The Centre for Advanced Product Design and Prototyping, Bangalore, India — Feb 1998 - Jan 1999
  Position Held: Finite Element Analyst, Engineering Services Group

- ❑ Indian Institute of Technology, Madras, India — June 1994 - May 1995
  Position Held: Project Associate.

Visiting Position

- ❑ Visiting Fellow, Centre for Digital Finance, University of Southampton, UK.
- ❑ Visiting Professor, Department of Economics and Business Economics, Aarhus University, Denmark. — July - Aug 2022/23
- ❑ Visiting Researcher, Stanford Cognitive & Systems Neuroscience Laboratory, Stanford University. — May - June 2023

Online Teaching

- ❑ University of London Worldwide — 2019 -
  1. Deputy Director, MSc(Data Science/FinTech/AI) online distance learning programmes
  2. Module leader for online courses Big Data Analysis and Blockchain Programming.

Teaching

- ❑ Goldsmiths, University of London — 2019 -
  1. Programme Leader for MSc (Data Science)
  2. Lecturing graduate course Big Data Applications for M.Sc (Data Science) at the Department of Computing.
- ❑ University of Aarhus — July - Aug 2022/23
  1. Lecturing graduate course High Frequency Finance and Algorithmic Trading at the Department of Economics and Business Economics.
- ❑ University of Southampton — 2018 - 2019
  1. Lecturing Options and Futures for undergraduate students and Quantitative Research Methods in Finance for M.Sc students at the Business School.
- ❑ King's College London — 2018 - 2019
  1. Lecturing graduate course High Frequency Finance for M.Sc (Computational Finance) students at the Department of Informatics.
- ❑ University of Greenwich — 2009 - 2018
  1. Lecturing undergraduate courses (a) Quantitative Methods & Systems, (b) Quantitative Research Methods and (c) Advanced Risk Management for the students from the Business School.
  2. Lecturing graduate courses (a) Research Methods, (b) Foundations of Scholarship, (c)Topics in Risk Management and (d) Financial Econometrics for M.Sc(Finance) and MBA students.
- ❑ University of Southampton — 2015 - 2016

1. Lecturing graduate course Portfolio Management and Exchange Traded Derivatives for M.Sc students at the Business School.

- London School of Economics 2004 - 2008
  1. Class Teacher: Teaching *Mathematical Methods* for first year undergraduates from the departments of Accounting and Finance, Anthropology, Economics, Mathematics and Statistics
  2. Class Teacher: Teaching *Mathematics for Finance and Valuation* for final year undergraduates from the departments of Economics, Finance, Mathematics and Statistics
  3. Teaching Assistant: For M.Sc courses (1) *Measure and Probability* and (2) *The Mathematics of the Black and Scholes Theory*

Research Students

- University of Greenwich
  1. T D M Baddevithana, *Bank Regulation Implications*, completed in 2013
  2. Irina Mateus, *Benchmark Indices, Alpha creation and Performance Persistence*, completed in 2017
  3. Ashiq Zaman, *The Optimal Use of Return Predictability: An Empirical Study from Emerging Markets*, completed in 2018
  4. Harihar Patel, *Is There Good News in Short Interest?*, 2017 -
- University of Southampton
  1. Musab Ali Salem Malahmeh, *Bitcoin Markets and Cyberattacks* , 2018 - 2021
  2. Jinqiang Ye, *Herding behavior in financial markets*, 2017 - 2022
- Goldsmiths, University of London
  1. Lefteris Stavridis, 2021 -
  2. Sasheendran Gopalakrishnakone, 2022 -

Professional Membership

- Fellow of the HEA, UK

Research Publications

- Editorial Duties
  1. Review Editor on the Editorial Board of *Artificial Intelligence in Finance* (specialty section of Frontiers in Artificial Intelligence).
  2. Guest Editor for the special issue on *Algorithms in Computational Finance*, Algorithms an Open Access Journal by MDPI, 2019
- Journal Publications
  1. S Mitra, V L Raju Chinthalapati, Ephraim Clark and F McGroarty (2019) *Stock-ADR Arbitrage: Microstructure Risk, Journal of International Financial Markets, Institutions & Money*, Accepted, (doi: https://doi.org/10.1016/j.intfin.2019.08.004).
  2. Pavel Gapeev, Neofytos Rodosthenous and V L Raju Chinthalapati (2019) *On the Laplace transforms of the first hitting times for drawdowns and drawups of diffusion-type processes, Risks*, (doi: https://doi.org/10.3390/risks7030087).
  3. Ash Booth, Enrico Gerding, Frank McGroarty and V L Raju Chinthalapati (2019), *High Frequency Trading Strategies and Flash Crashes: an Agent Based Model Perspective, Annals of Operations Research*, (doi: https://doi.org/10.1007/s10479-018-3019-4).
  4. Amer Bakhach, Edward Tsang and V L Raju Chinthalapati (2018), *A Trading Strategy Based on Forecasting Directional Changes, Intelligent Systems in Accounting, Finance and Management*, (doi: https://doi.org/10.1002/isaf.1425).
  5. V L Raju Chinthalapati, Sovan Mitra and Antoaneta Sergueiva (2018), *Big Data And PAC Learning In The Presence Of Noise: Implications For Financial Risk Management , International Journal of Artificial Intelligence*. www.ceser.in/ceserp/index.php/ijai/article/view/5954)

6. Amer Bakhach, Venkata L. Raju Chinthalapati, Edward P. K. Tsang and Abdul Rahman El Sayed (2018), *Intelligent Dynamic Backlash Agent: A Trading Strategy Based on the Directional Change Framework*, *Algorithms*, (doi:10.3390/a11110171).
7. Antoaneta Sergueiva, V L Raju Chinthalapati, Thanos Verousis and Louisa Chen (2017)*Multichannel Contagion vs Stabilisation in Multiple Interconnected Financial Markets*,*Quantitative Finance*, (doi: https://doi.org/10.1080/14697688.2017.1357973).
8. Chinthalapati, Venkata, Mateus, Cesario and Todorovic, Natasa (2017) *Alphas in disguise: A new approach to uncovering them. International Journal of Finance and Economics*, 22 (3). pp. 234-243. ISSN 1076-9307 (Print), 1099-1158 (doi:10.1002/ijfe.1581).
9. Mateus, Cesario, Chinthalapati, Raju and Mateus, Irina B. (2016) *Intraday industry-specific spillover effect in European equity markets. Quarterly Review of Economics and Finance*, 63. pp. 278-298. ISSN 1062-9769 (doi:10.1016/j.qref.2016.04.011).
10. C.V.L. Raju, Y. Narahari and K. Ravikumar, *Learning Dynamic Prices in Multi-Seller Electronic Retail Markets with Price Sensitive Customers, Stochastic Demands, and Inventory Replenishments*. Special issue on Game-theoretic Analysis and Stochastic Simulation of Negotiation Agents of the *IEEE Transactions on SMC, Part C*, Volume 36, Number 1, 2006, pp. 92-106.
11. C.V.L. Raju, Y. Narahari, and K. Ravikumar, *Learning Dynamic Prices in Electronic Retail Markets with Customer Segmentation*, *Annals of Operations Research*, Springer, Volume 143, Number 1, 2006, pp. 59-75.
12. Y. Narahari, C.V.L. Raju, K. Ravikumar, and Sourabh Shah, *Dynamic Pricing Models for Electronic Business*, *Special Issue on E-Commerce, Sadana, Indian Academy of Sciences*, 2004.

❑ Working papers

1. Kefei You, V L Raju Chinthalapati, Tapas Mishra and Ramakanta Patra *International Trade Network and Stock Market Connectedness: Evidence from Eleven Major Economies*. (Revise & Resubmit)
2. V L Raju Chinthalapati and Frank McGroarty *Strategic Asset-Allocation using mean conditional value at risk framework*.
3. V L Raju Chinthalapati, Cesario Mateus and Frank McGroarty *Capital Structure-informed Portfolio Outperformance: the case against Modigliani and Miller*.
4. Nikolay Y. Nikolaev and V L Raju Chinthalapati *Nonlinear Filtering of Asymmetric Stochastic Volatility Models for Generalized Expectation Maximisation*. (Revise & Resubmit)
5. Shuai Ma, Raju V. Chinthalapati and Edward P.K. Tsang *Nowcasting Directional Change*. (Revise & Resubmit)
6. V L Raju Chinthalapati, Cesario Mateus and Natasa Todorovic *Fund of funds: how to construct portfolios of mutual fund winners?*.
7. Sasheendran G and V L Raju Chinthalapati *Wavelet applications in oil price dynamics*.

❑ Conference Publications

1. Ailun Ye, V L Raju Chinthalapati, Antoaneta Serguieva and Edward Tsang, *Developing Sustainable Trading Strategies Using Directional Changes with High Frequency Data*, *IEEE International Conference on Big Data*, Boston 2017.
2. R Patra and V L Raju Chinthalapati, *A Model of Dynamic Bertrand Competition with Unknown Costs*, *Singapore Economic Review Conference*, Singapore, Aug 2017.
3. A. Bakhach, E. Tsang, W. L. Ng and V. L. Raju Chinthalapati, *Backlash Agent: A Trading Strategy for FX Market Based on Directional Change*, *IEEE SSCI (Computational Intelligence and Financial Engineering) Conference*, Greece, Dec 2016.
4. E. Tsang, H. Ao and V. L. Raju Chinthalapati, *Forecasting Significant Price Movements in FX Markets using Directional Changes*, *22nd International Conference on Forecasting Financial Markets: Advances for Exchange Rates, Interest Rates and Asset Management*, Rennes, France, May 2015.

5. Pradeep Ghosh and V L Raju Chinthalapati, *Financial Time-series Forecasting using Agent Based Models in Equity and FX Markets*, *IEEE CEEC 2014*, Essex, UK, Sep 2014.
6. R. Patra, H V Wyk and V L Raju Chinthalapati, *Stochastic Utility in Ramsey Model*, *7th International Conference on Computational and Financial Econometrics*, London, UK, Dec 2013.
7. V. L. Raju Chinthalapati, *Volatility Forecast in FX Markets using Evolutionary Computing and Heuristic Techniques*, *IEEE Computational Intelligence for Financial Engineering and Economics 2012*, New York, March 2012.
8. V. L. Raju Chinthalapati, *High and Low Frequency Statistical Arbitrage via the Optimal Thermal Causal Path*, *17th Forecasting Financial Markets Conference*, Hannover, May 2010.
9. V. L. Raju Chinthalapati, *Volatility Forecast in Financial Time-series using Evolutionary Computing Techniques*, *23rd European Conference on Operational Research, Bonn, 2009*
10. V. L. Raju Chinthalapati and S. Bhatnagar, *A Simultaneous Deterministic Perturbation Actor-Critic Algorithm with Application to Optimal Mortgage Refinancing*, *IEEE Conference on Control and Decision, 2006*.
11. C.V.L. Raju, Y. Narahari, and K. Ravikumar, *Reinforcement Learning Applications in Dynamic Pricing of Retail Markets*, proceedings of *IEEE Conference on Electronic Commerce, CEC-2003*, New Port Beach, California, June 2003, pp. 339-346.
12. C.V.L. Raju, Y. Narahari, *Learning Dynamic Prices in Single agent Retail Markets*, proceedings of *International Conference on Operations Research for Development*, *ICORD 2002*, Chennai, December 27-30, 2002.
13. C.V.L. Raju and Y. Narahari, *Queueing network modeling and lead time compression of electronic procurement*, proceedings of *IEEE International Conference on Robotics and Automation, ICRA-2002*, Washington D.C, USA, May 2002.
14. C.V.L. Raju and Y. Narahari, *Use of reinforcement learning in iterative bundle auctions for procurement*, proceedings of *The International Conference on Automation, Energy, and Information Technology, EAIT-2001*, Indian Institute of Technology, Kharagpur, December 2001.

Invited Presentations

- October 2010: **GPUs in Finance**, Presentation given at Chair of Entrepreneurial Risks, Dept. of Management, Technology, and Economics, ETH, Zurich.
- March 2011: **Agent-based Models of Financial Markets**, Presentation given at Business School, University of Greenwich, London.
- April 2011: **Black Swans and Dragon Kings: do we experience a few more before our time is up?**, Invited talk given at *Spinlondon* 1-Day workshop on *Resilience Imperative: How Resilient is My Organization*, London.
- June 2013: **Agent Based Models in Computational Finance**, Presentation given at Dept. of Computer Science, University College London, London.
- Mar 2016: **High Frequency Finance Workshop 2016**, Centre for Computational Finance and Economic Agents, School of Computer Science and Electronic Engineering, University of Essex.
- Feb 2018: **Topics in Quantitative and Computational Finance**, Presentation given at School of Business Management and Economics, University of Sussex.
- Apr 2018: **Network Models in Computational Finance**, Presentation given at Department of Informatics, King's College London.
- July 2018: **Big Data Analytics and Complex Systems in Finance and Economics**, Imperial College Business School, London.
- June 2019: **Digitalisation of Finance**, Goldsmiths, University of London London.

Computer Skills

- Mathematical/Statistical Packages: MATLAB, EViews, SAS and SPSS
- Languages: C/C++, C# , JAVA, Python and R
- Big Data Analytics Tools: Apache Hadoop, Kafka and Spark

Academic Activities

- ❑ Member, Board of Examiners for the *BSc external exams* (2004-2023) of the University of London.
- ❑ PG External Examiner:(2016/17- 2019/20)
  1. *Covering a) MSc Computational Finance and b) MSc Algorithmic Trading degree schemes at University of Essex.*
  2. *Covering a) Quantitative Methods for Economics and Finance and b) Research Methods for Banking, Economics and Finance modules for the MSc programmes at University of Lincoln.*
- ❑ External Examiner for PhD dissertations
  1. *Agent Based Modelling and Market Microstructure, by Buhong Liu, April 2023, Kings College London, UK*.
  2. *Relating Volatility and Jumps between two markets under Directional Change, by Shengnan Li, April 2022, University of Essex*.
  3. *Estimating Directional Changes Trend Reversal in Forex using Machine Learning, by Adesola Tolulope Noah Adegboye, Jan 2022, University of Kent*.
  4. *The effect of psychological and biological factors on financial choices, by Di Wang, May 2018, University of Southampton*.
  5. *Cross-sectional volatility index analysis in Asian markets with no derivatives, by F J B Md Fadzil, April 2018, University of Essex*.
  6. *A Directional Changes based study on stock markets, by Han Ao, 2017, University of Essex*.
  7. *Essays on Modelling the Volatility Dynamics and Linkages of Emerging and Frontier Stock Markets, by Habiba Al Mughairi, 2016, Brunel University*.
  8. *The potential for assistive/interventionist trading tools in trading financial markets, by David J Norman, 2016, University of Essex*.
  9. *Public News in The Exchange Rate Market, by Liutauras Petrucionis, 2015, University of Essex*.
  10. *Liquidity Prediction in Limit Order Book Markets, by Keren Dong, 2014, University of Liverpool*.
- ❑ Reviewer for *Journal of Forecasting*, *European Journal of Finance*, *Journal of Applied Accounting Research*, *Quantitative Finance*, *Annals of Operations Research* and *IEEE Conferences on Decision and Control*.
- ❑ Member, Program Committee, *ICEC 2011 Workshop on Robustness and Reliability of Electronic Marketplaces*, Liverpool, UK, 2 August 2011.
- ❑ Member, Technical Program Committee, *CEEC 2016, CEEC 2017 & CEEC 2018 Conference on Computational Finance and Big Data*, Colchester, UK.
- ❑ Member, Technical Program Committee, *2022 ACM International Conference on AI in Finance (ICAIF)*, New York, USA.
- ❑ Member, Program Committee, *FMA 2023 European Conference*, Aalborg, Denmark.

References

Prof. Martin Anthony
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Prof. Adam Ostaszewski
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