Raghava Mutharaju

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Summary

- Research Scientist with experience in knowledge graphs, big data, ontology modeling & reasoning, RDF query processing, and Semantic Web applications.

- Industry experience of 5 years including experience at GE Research Center, IBM T.J. Watson Research Center, IBM Research Ireland, Bell Labs, Xerox Research Center.

- Published 20+ research papers with 250+ citations.

- Co-organized tutorials at IJCAI 2016, AAAI 2015, and ISWC 2014.

- Workshop co-chair at WebSci 2017 and ISWC 2015.

- Awarded Amazon AWS and Microsoft Azure research grants.

Research Interests

- Knowledge Graphs, Big Data, Ontology Modeling & Reasoning, RDF Query Processing, and Semantic Web Applications.

Education

- **Wright State University**   Dayton, USA
  PhD in Computer Science and Engineering   *July 2016*
    - Dissertation title: `Distributed Rule-Based Ontology Reasoning`
    - Advisor: Pascal Hitzler
    - CGPA: 3.64/4.00

- **Motilal Nehru National Institute of Technology**   Allahabad, India
  Master of Technology (M.Tech) in Computer Science   *June 2006*
    - Thesis title: `Traceability from Use Case to .NET Assembly via Design Patterns`
    - Advisor: Banshi D. Chaudhary
    - CPI: 8.75/10.00

- **Jawaharlal Nehru Technological University**   Hyderabad, India
  Bachelor of Technology (B.Tech) in Computer Science   *June 2004*
    - Aggregate %: 78.76

- **Narayana Junior College**   Nellore, India
  Intermediate Education   *March 2000*
    - Aggregate %: 88.50

- **C.V Raman High School**   Nellore, India
  Secondary Education   *March 1998*
    - Aggregate %: 83.16

Research & Industry Experience

- **GE Global Research** NY, USA
  Research Scientist *Jul 2016 - Present*
- **IBM T.J. Watson Research Center** NY, USA
  Research Intern *Jun 2015 - Aug 2015*
- **IBM Research** Dublin, Ireland
  Research Intern *Jun 2013 - Aug 2013*
- **Bell Labs** Dublin, Ireland
  Research Intern *Jun 2012 - Aug 2012*
- **Xerox Research Center** NY, USA
  Research Intern *Jun 2011 - Aug 2011*
- **Stardog Union** Boston, USA
  Research Intern *Jun 2010 - Aug 2010*
- **CA Technologies** Hyderabad, India
  Software Engineer *Aug 2006 - Dec 2008*

Teaching Assistantship

- **Wright State University** Dayton, USA
  TA Experience *21 months*
  - Introduction to programming in Java: Jan 2009 - Jun 2009, Sept 2009 - Mar 2010
  - Algorithms & Data Structures: Sept 2014 - Apr 2015
- **Motilal Nehru National Institute of Technology** Allahabad, India
  TA Experience *11 months*
  - Database Management Systems: Aug 2004 - June 2005

Publications

1   Manuscripts in preparation

[M2] Grigoris Antoniou, Sotiris Batsakis, **Raghava Mutharaju**, Jeff Z. Pan, Guilin Qi, Ilias Tachmazidis, Jacopo Urbani, and Zhangquan Zhou. *Reasoning on the Web of Data.* Journal article.

[M1] **Raghava Mutharaju**, Sambhawa Priya, Pascal Hitzler, Prabhaker Mateti, Jeff Heflin. *Distributed OWL EL Reasoning over Large Knowledge Bases.* Journal article.

2   Books

[B1] Sherif Sakr, Marcin Wylot, **Raghava Mutharaju**, Danh Le Phuoc, and Irini Fundulaki. *Linked Data: Storing, Querying, and Reasoning.* Springer 2018. ISBN 978-3319735146. `http://a.co/9FDuxwe`.

3   Conference Papers

[C7] **Raghava Mutharaju**, Freddy Lécué, Jeff Z. Pan, Jiewen Wu, Pascal Hitzler. *AI for Traffic Analytics.* In: IEEE Intelligent Informatics Bulletin. Vol. 17 (1), pp. 21-26, 2016. Invited paper.

[C6] Zhangquan Zhou, Guilin Qi, Chang Liu, **Raghava Mutharaju**, Pascal Hitzler. *Reasoning with Large Scale OWL 2 EL Ontologies based on MapReduce.* Proceedings of the 18th Asia Pacific Web Conference (APWeb), Suzhou, China, September 23-25, 2016. Lecture Notes in Computer Science, vol. 9932, pp. 429-433. Springer 2016. `https://doi.org/10.1007/978-3-319-45817-5_40`.

[C5] **Raghava Mutharaju**, Pascal Hitzler, Prabhaker Mateti, Freddy Lécué. *Distributed and Scalable OWL EL Reasoning.* Proceedings of the 12th Extended Semantic Web Conference (ESWC 2015), Portoroz, Slovenia, May 31-June 4, 2015. Vol. 9088 of Lecture Notes in Computer Science, pages 88-103. Springer, Heidelberg, 2015. `https://doi.org/10.1007/978-3-319-18818-8_6`.

[C4] **Raghava Mutharaju**. *Very Large Scale OWL Reasoning Through Distributed Computation.* Proceedings of the 11th International Semantic Web Conference (ISWC 2012), Part II, Boston, MA, USA, Nov 11-15, 2012. Vol. 7650 of Lecture Notes in Computer Science, pp. 407-414. Springer, Heidelberg, 2012. `https://doi.org/10.1007/978-3-642-35173-0_30`.

[C3] Zhangquan Zhou, Guilin Qi, Chang Liu, Pascal Hitzler, **Raghava Mutharaju**. *Reasoning with Fuzzy-$\mathcal{EL}^+$ Ontologies Using MapReduce.* Proceedings of the 20th European Conference on Artificial Intelligence (ECAI 2012), 27-31 August 2012, Montpellier, France. Frontiers in Artificial Intelligence and Applications, Vol. 242, IOS Press, Amsterdam, 2012, pp. 933-934. `https://doi.org/10.3233/978-1-61499-098-7-933`.

[C2] Satya S. Sahoo, D. Brent Weatherly, **Raghava Mutharaju**, Pramod Anantharam, Amit Sheth, Rick L. Tarleton. *Ontology-driven Provenance Management in eScience: An Application in Parasite Research.* OnTheMove Federated Conferences & Workshops (OTM 2009) ODBASE 2009, Vilamoura, Algarve-Portugal, Nov 3-5, 2009, vol. 5871 of Lecture Notes in Computer Science, pages 992-1009. Springer, Heidelberg, 2009. `https://doi.org/10.1007/978-3-642-05151-7_18`.

[C1] Meenakshi Nagarajan, Karthik Gomadam, Amit Sheth, Ajith Ranabahu, **Raghava Mutharaju** and Ashutosh Jadhav. *Spatio-Temporal-Thematic Analysis of Citizen-Sensor Data - Challenges and Experiences.* Proceedings of the 10th International Conference on Web Information Systems Engineering (WISE 2009), Oct 5-7, Poland, 2009, vol. 5802 of Lecture Notes in Computer Science, pages 539-553. Springer, Heidelberg, 2009. `https://doi.org/10.1007/978-3-642-04409-0_52`.

4 Edited Proceedings

[E1] Claudia d'Amato, Freddy Lécué, **Raghava Mutharaju**, Tom Narock, and Fabian Wirth (Eds.). Proceedings of the *1st International Diversity++ Workshop*, co-located with the 14th International Semantic Web Conference (ISWC 2015), Bethlehem, Pensylvania, USA, October 12, 2015. CEUR Workshop Proceedings 1501, CEUR-WS.org, 2015. http://ceur-ws.org/Vol-1501

5 Workshop Papers

[W10] **Raghava Mutharaju**, Prabhaker Mateti, and Pascal Hitzler. *Towards a Rule Based Distributed OWL Reasoning Framework.* Proceedings of the 12th OWL Experiences and Directions Workshop (OWLED 2015) co-located with the 14th International Semantic Web Conference (ISWC 2015). Lecture Notes in Computer Science, Springer, Heidelberg, 2015. `https://doi.org/10.1007/978-3-319-33245-1_9`.

[W9] **Raghava Mutharaju**. *Distributed Reasoning over Ontology Streams and Large Knowledge Base.* NSF Data Science Workshop 2015.

[W8] Kasthuri Jayarajah, Shuochao Yao, **Raghava Mutharaju**, Archan Misra, Geeth De Mel, Julie Skipper, Tarek Abdelzaher, and Michael Kolodny. *Social Signal Processing for Real-time Situational Understanding: a Vision and Approach.* Proceedings of the 1st International Workshop on Social Sensing (SocialSens 2015) co-located with the the 12th IEEE International Conference on Mobile Ad hoc and Sensor Systems (IEEE MASS 2015), Dallas, TX, USA, Oct 19-22, 2015. IEEE, 2015, pp. 627-632. `https://doi.org/10.1109/MASS.2015.89`. Invited paper.

[W7] **Raghava Mutharaju**, Pavan Kapanipathi. *Are We Really Standing on the Shoulders of Giants?* Proceedings of the 1st International Workshop on Negative or Inconclusive Results in Semantic Web, NoISE 2015, co-located with the 12th Extended Semantic Web Conference (ESWC 2015), Portoroz, Slovenia, June 1st, 2015. CEUR Workshop Proceedings Vol-1435.

[W6] **Raghava Mutharaju**, Pascal Hitzler, Prabhaker Mateti. *Distributed OWL EL Reasoning: The Story So Far.* SSWS 2014, Scalable Semantic Web Knowledge Base Systems. Proceedings of the 10th International Workshop on Scalable Semantic Web Knowledge Base Systems co-located with 13th International Semantic Web Conference (ISWC 2014) Riva del Garda, Italy, October 20, 2014. CEUR Workshop Proceedings Vol-1261, pp. 61-76.

[W5] **Raghava Mutharaju**, Prabhaker Mateti, Pascal Hitzler. *Developing a Distributed Reasoner for the Semantic Web.* ISWC-DEV 2014. Proceedings of the ISCW Developers Workshop 2014, co-located with the 13th International Semantic Web Conference (ISWC 2014) Riva del Garda, Italy, October 19, 2014. CEUR Workshop Proceedings Vol-1268, pp. 108-112.

[W4] **Raghava Mutharaju**, Pascal Hitzler, Prabhaker Mateti. *DistEL: A Distributed EL+ Ontology Classifier.* Proceedings of the 9th International Workshop on Scalable Semantic Web Knowledge Base Systems (SSWS 2013), Sydney, Australia, October 21, 2013. CEUR Workshop Proceedings Vol. 1046, pp. 17-32.

[W3] Zhangquan Zhou, Guilin Qi, Chang Liu, Pascal Hitzler, **Raghava Mutharaju**. *Scale Reasoning with Fuzzy-$\mathcal{EL}^+$ Ontologies based on MapReduce.* In: Proceedings of the IJCAI-2013 Workshop on Weighted Logics for Artificial Intelligence, WL4AI-2013, Beijing, China, August 2013, pp. 87-93.

[W2] **Raghava Mutharaju**. *How I Would Like Semantic Web To Be, For My Children.* In: Workshop on Semantic Web in 10 years, co-located with the 11th International Semantic Web Conference (ISWC 2012), Boston, USA, 2012.

[W1] **Raghava Mutharaju**, Frederick Maier, Pascal Hitzler. *A MapReduce Algorithm for $\mathcal{EL}^+$.* Proceedings of the 23rd International Workshop on Description Logics (DL2010), Waterloo, Canada, 2010. CEUR Workshop Proceedings Vol. 573, pp. 464-474.

6 Posters/Demos/Challenges

[PD5] **Raghava Mutharaju**, Sherif Sakr, Alessandra Sala, Pascal Hitzler. *D-SPARQ: Distributed, Scalable and Efficient RDF Query Engine.* Proceedings of the International Semantic Web Conference (ISWC 2013) Posters & Demonstrations Track, Sydney, Australia, October 23, 2013. CEUR Workshop Proceedings Vol. 1035, pp. 261-264.

[PD4] David Carral, Amit Joshi, Adila Krisnadhi, **Raghava Mutharaju**, Kunal Sengupta, Cong Wang. *Konf Connect.* WWW 2012, Metadata Challenge. 21st International Conference on World Wide Web. April 16-20, 2012, Lyon, France.

[PD3] Ashutosh Jadhav, Wenbo Wang, **Raghava Mutharaju**, Pramod Anantharam, Vinh Nyugen, Amit P. Sheth, Karthik Gomadam, Meenakshi Nagarajan, and Ajith Ranabahu. *Twitris: Socially Influenced Browsing.* Semantic Web Challenge 2009, 8th International Semantic Web Conference, Oct. 25-29 2009, Washington, DC, USA.

[PD2] **Raghava Mutharaju**, Satya S. Sahoo, D. Brent Weatherly, Pramod Anantharam, Flora Logan, Amit P. Sheth, Rick Tarleton. *Ontology Driven Integration of Biology Experiment Data.* Ohio Collaborative Conference on BioInformatics (OCCBIO 2009), June 14-17, 2009.

[PD1] Pramod Anantharam, Satya S. Sahoo, D. Brent Weatherly, Flora Logan, **Raghava Mutharaju**, Amit P. Sheth, Rick Tarleton. *Trykipedia: Collaborative Bio-Ontology Development using Wiki Environment.* Ohio Collaborative Conference on BioInformatics (OCCBIO 2009), June 14-17, 2009.

7 Technical Reports

[TR3] **Raghava Mutharaju**. Distributed Rule-Based Ontology Reasoning. August 2016. PhD Dissertation. Department of Computer Science, Wright State University, Dayton, Ohio.

[TR2] Frederick Maier, **Raghava Mutharaju**, Pascal Hitzler. *Distributed Reasoning with $\mathcal{EL}^{++}$ Using MapReduce.* June 2010. Department of Computer Science, Wright State University, Dayton, Ohio.

[TR1] **Raghava Mutharaju**, Banshi D. Chaudhary. *Traceability from Use Case to .NET Assembly via Design Patterns.* July 2006. Department of Computer Science, MNNIT, Allahabad, India.

Tutorials & Workshops Organized

- Workshop titled *Industrial Knowledge Graphs*, co-located with the 9th International ACM Web Science Conference (WebSci 2017). Co-chaired with Varish Mulwad. June 25, 2017, Troy, NY, USA.

- Tutorial titled *AI for Smarter Cities. Are we there yet?* at the 25th International Joint Conference on Artificial Intelligence (IJCAI 2016), July 9-11, 2016, New York, USA. Co-organized with Freddy Lécué, Jeff Z. Pan, Jiewen Wu and Pascal Hitzler.

- Workshop titled *Diversity++*, co-located with the 14th International Semantic Web Conference (ISWC 2015). Co-chaired with Claudia d'Amato, Freddy Lécué, Tom Narock and Fabian Wirth. October 12, 2015, Bethlehem, PA, USA.

- Tutorial titled *AI for Smarter Cities, Hype or Reality? A Study in Dublin, Bologna, Miami and Rio* at the 29th AAAI Conference on Artificial Intelligence (AAAI 2015), January 26, 2015, Texas, USA. Co-organized with Freddy Lécué, Jeff Z. Pan, Jiewen Wu and Pascal Hitzler.

- Tutorial titled *Large Scale Reasoning over Semantic Data* at the 13th International Semantic Web Conference (ISWC 2014), October 19, 2015, Riva del Garda, Italy. Co-organized with Jeff Z. Pan, Ilias Tachmazidis and Guilin Qi.

Professional Activities

- **Program Committee member:** HQA 2018, WWW 2018, ESWC 2018, ICDIS 2018, K-CAP 2017, SEMANTiCS 2017, ISWC 2017, SEMAPRO 2017, EUSPN 2016, uSitu 2016, SSWS 2015, ESWC 2015 Posters & Demos, ESWC 2014 Posters & Demos, SSWS 2014.

- **Reviewer:** FGCS 2017, COMLAN 2017, JWS 2016, ESWC (2016, 2015, 2012), KR (2016, 2014), JoDS 2015, AIMSA 2014, SWJ 2014, ECAI (2014, 2010), RR 2014, JELIA 2014, EKAW 2014, ICBO 2013, SSWS (2013, 2011), JIST (2013, 2011), ISWC (2016, 2013, 2011), WWW 2012, FoIKS 2012, DL (2011, 2010).

Awards & Recognition

- Best reviewer In-Use track at ISWC 2017.

- Invited to present at the 6th student workshop on Cloud and Data Services organized by IBM T.J. Watson Research Center, NY. December 3-4, 2015.

- Invited to attend NSF Data Science workshop 2015 at the University of Washington, Seattle. August 5-7, 2015.

- Awarded Amazon AWS Research grant for a period of 2 years.

- Awarded Microsoft Azure Research grant for a period of 1.5 year.

- News article on my visit to University of Huddersfield appeared on the news of University of Huddersfield and Wright State University.

- Travel awards for ISWC 2015, AAAI 2015, ISWC 2014, ISWC 2012, RR 2012, and DL 2010.

- Spot award at CA Technologies.

References

Available on request