# Dimitrios Tsoumakos, PhD

## 0.1. Personal

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| Date of Birth | 14/04/1976 |
| Place of Birth | ATHENS |
| Telephone | +30-210-7722867 |
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### 0.1.1. Studies

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|---|---|
| 2002- 2006 | Doctor of Philosophy (PhD), Computer Science Department, University of Maryland, College Park, 20742, USA<br>Title of Thesis: *'Search, Replication and Data Dissemination for Unstructured P2P Networks'*<br>Advisor: Prof. Nicholas Roussopoulos |
| 2000- 2002 | Master of Science (MSc), Computer Science Department, University of Maryland, College Park, 20742, USA<br>Title of Thesis: *'Tracking the Locality of change in Web Pages'*<br>Advisor: Prof. Nicholas Roussopoulos |
| 1994- 1999 | Diploma in Electrical and Computer Engineering, School of Electrical and Computer Engineering, National Technical University of Athens, Greece<br>Title of Thesis: *'Electronic Study Guide of the ECE Department'*<br>Advisor: Prof. Timos Sellis |

### 0.1.2 Scholarships and Awards

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| 2019 | **Best Paper Runner up Award in the 31st International Conference on Scientific and Statistical Database Management (SSDBM 2019)** |
| 2013 | **Best Paper Award in the 13th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2013)** |
| 2000-2002 | **UMIACS (University of Maryland Institute for Advanced Computer Studies) scholarship** |
| 1998 | **«Karydoyiannis» scholarship for high G.P.A. (9.6/10.0)** |
| 1994 | **«Papastavridis» scholarship for my admittance to the ECE department (6th out of 160)** |

### 0.1.3 Publications

#### 0.1.3.1 Theses

[T01] **Tsoumakos**, D. 2006. 'Search, Replication and Data Dissemination for Unstructured P2P Networks', PhD Thesis, Computer Science Department, University of Maryland, College Park, 20742, USA.

[T02] **Tsoumakos**, D. 2002. 'Tracking the Locality of change in Web Pages', MSc Thesis, Computer Science Department, University of Maryland, College Park, 20742, USA.

[T03] **Tsoumakos**, D. 1999. 'Electronic Study Guide of the ECE Department', Diploma Thesis, School of Electrical and Computer Engineering, National Technical University of Athens, Greece.

#### 0.1.3.2 Articles in Refereed International Journals

[J01] **Mytilinis, I., Tsoumakos, D., Koziris, N., 2020.** 'Workload-Aware Wavelet Synopses for Sliding Window Aggregates'. *In: Distrib. Parallel Databases (2020). https://doi.org/10.1007/s10619-020-07307-w.*

[J02] **Doka, K., Kosmatopoulos, A., Papadopoulos, A., Sioutas, S., Tsichlas, K., Tsoumakos, D., 2020.** 'Dynamic planar range skyline queries in log logarithmic expected time'**.** *In: Information Processing Letters, Volume 162, 2020, 105990.*

[J03] **Doka, K., Mytilinis, I., Papailiou, N., Giannakouris, V., Tsoumakos, D., Koziris, N.. 2019.** 'Multi-engine Analytics with IReS'. *In: Castellanos M., Chrysanthis P., Pelechrinis K. (eds) Real-Time Business Intelligence and Analytics. BIRTE 2015, BIRTE 2016, BIRTE 2017. Lecture Notes in Business Information Processing, vol 337. Springer, Cham.*

[J04] **Mytilinis, I., Tsoumakos, D., Koziris, N., 2019.** 'Scaling the Construction of Wavelet Synopses for Maximum Error Metrics'. *In IEEE Transactions on Knowledge and Data Engineering, vol. 31, no. 9, pp. 1794-1808, 1 Sept. 2019.*

[J05] **Giannakopoulos, I.. Konstantinou, I., Tsoumakos, D., Koziris, N., 2018.** 'Cloud application deployment with transient failure recovery', *In Journal of Cloud Computing. Advances, Systems and Applications, 2018, 7:11.*

[J06] **Nodarakis, N., Pitoura, E., Sioutas, S., Tsakalidis, A., Tsoumakos, D., Tzimas, G.,** 2016. '*kdANN+: A Rapid AkNN Classifier for Big Data', *In Transactions on Large-Scale Data- and Knowledge-Centered Systems, 23: 139-168 (2016).*

[J07] **Xing, W., Jie, W., Tsoumakos, D., Ghanem, M.,** 2015**.** 'A network approach for managing and processing big cancer data', *In Cluster Computing 18(3): 1285-1294 (2015) .*

[J08] **Sioutas, S., Sakkopoulos, E., Panaretos, A., Tsoumakos, D., Gerolymatos, P., Tzimas, G., Manolopoulos, Y.,** 2014. 'D-P2P-Sim+: A novel distributed framework for P2P protocols performance testing', *In Journal of Systems and Software, Nov. 2014*

[J09] **Sioutas, S., Panaretos, A., Karydis, I., Tsoumakos, D., Tzimas, G., Tsolis, D.,** 2012. 'SART: Speeding up Query Processing in Sensor Networks with an Autonomous Range Tree Structure', In *SIGAPP Appl. Comput. Rev., Vol. 12, No. 3, 60-74, Sep. 2012*

[J10] **Asiki, A., Tsoumakos, D., Koziris, N.,** 2012. 'A DHT-Based System for the Management of Loosely Structured, Multidimensional Data', In *Transactions on Large-Scale Data- and Knowledge-Centered Systems(TLDKS), 6, 2012, 134-166.*

[J11] **Doka, K., Tsoumakos, D., Koziris, N.** 2011., 'Brown Dwarf: A Fully-Distributed, Fault-Tolerant Data Warehousing System', In Journal of Parallel and Distributed Computing 71(11), 1434-1446, Nov. 2011.

[J12] **Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2011. 'Fast and Cost-Effective Online Load-Balancing in Distributed Range-Queriable Systems', In *Transactions on Parallel and Distributed Systems, 22(8), 1350-1364, Aug. 2011.*

[J13] **Doka, K., Tsoumakos, D., Koziris, N.** 2010., 'Online Querying of d-Dimensional Hierarchies', *Journal of Parallel and Distributed Computing*, *71(3), 424-437, March 2011.*

[J14] **Asiki, A., Tsoumakos, D., Koziris, N.,** 2010. 'Distributing and Searching Concept Hierarchies: An Adaptive DHT-based System', *Cluster Computing*, 13(3): 257-276.

[J15] **Chazapis, A., Asiki, A., Tsoukalas, G., Tsoumakos, D., Koziris, N.,** 2010. 'Replica-aware, multi-dimensional range queries in Distributed Hash Tables', *Computer Communications* 33(8): 984-996.

[J16] **Asiki, A., Doka, K., Zissimos, A., Konstantinou, I., Tsoumakos, D., Koziris, N., Tsanakas, P.,** 2009. 'A Grid middleware for data management exploiting Peer-to-Peer techniques', In *FUTURE GENERATION COMPUTER SYSTEMS*, 25: 426–435.

[J17] **Kantere, V., Tsoumakos, D., Sellis, T., Roussopoulos, N.,** 2009. 'GrouPeer: Dynamic Clustering of P2P Databases', *Information Systems* 34(1): 62-86

[J18] **Kantere, V., Tsoumakos, D., Sellis, T.,** 2008. 'A Framework for Semantic Grouping in P2P Databases', *Information Systems* 33(7-8): 611-636

[J19] **Tsoumakos, D., Roussopoulos N.** 2003. 'Probabilistic Knowledge Discovery and Management for P2P Networks', *P2P Journal*, November 2003

### 0.1.3.3 Book Chapters

### 0.1.3.4 Articles in Refereed International Conferences

[C01] **Giannakopoulos, I., Tsoumakos, D.,** 2020. 'Content-based Analytics: Moving Beyond Data Size'. In Proceedings of the Sixth IEEE International Conference on Big Data Computing Service and Machine Learning Applications, August 2020, Oxford, UK (online).

[C02] **Mytilinis, I., Tsoumakos, D., Koziris, N.,** 2019. 'Maintaining Wavelet Synopses for Sliding-Window Aggregates'. In Proceedings of the 31st International Conference on Scientific and Statistical Database Management (SSDBM), July 23-25 2019, Santa Cruz, CA, USA.

[C03] **Bakogiannis, T., Giannakopoulos, I., Tsoumakos, D., Koziris, N.,** 2019: 'Apollo: A Dataset Profiling and Operator Modeling System'. In Proceedings of the 2019 ACM SIGMOD/PODS International Conference on Management of Data, June 30 - July 5, 2019 Amsterdam, The Netherlands.

[C04] **Bakogiannis, T., Giannakopoulos, I., Tsoumakos, D., Koziris, N.,** 2019: 'Predicting Graph Operator Output over Multiple Graphs'. In Proceedings of the 19th International Conference on Web Engineering (ICWE), June 11 - 14, 2019, Daejeon, Korea.

[C05] **Giannakopoulos, I., Tsoumakos, D., Koziris, N.,** 2018. 'A Content-Based Approach for Modeling Analytics Operators'. In Proceedings of the 2018 Conference on Information and Knowledge Management (CIKM 2018), April 22-26, 2018, Lingotto, Turin, Italy.

[C06] **Giannakopoulos, I., Tsoumakos, D., Koziris, N.,** 2018. 'Towards an Adaptive, Fully Automated Performance Modeling Methodology for Cloud Applications'. In Proceedings of the IEEE International Conference on Cloud Engineering 2018 (IC2E 2018), April 17-20, 2018, Orlando, FL, USA.

[C07] **Giannakopoulos, I., Tsoumakos, D., Koziris, N.,** 2017. 'A Decision Tree Based Approach Towards Adaptive Modeling of Big Data Applications'. In Proceedings of the 2017 IEEE International Conference on Big Data (BigData 2017), December 11-14, 2017, Boston, MA, USA.

[C08] **Singh, A., Tsoumakos, D.,** 2017. 'Towards an Algebraic Cost Model for Graph Operators'. In Proceedings of the 3rd International Workshop on Algorithmic Aspects of Cloud Computing (ALGOCLOUD 2017), in conjunction with the ALGO 2017 Conference, September 4-8, 2017, Vienna, Austria.

[C09] **Giannakopoulos, I., Konstantinou, I., Tsoumakos, D., Koziris, N.**, 2017. 'AURA: Recovering from Transient Failures in Cloud Deployments' (demo paper). In Proceedings of the 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID 2017), May 14-17, 2017, Madrid, Spain.

[C10] **Doka, K., Papailiou, N., Giannakouris, V., Tsoumakos**, **D., Koziris, N.,** 2016. 'Mix 'n' Match Multi-Engine Analytics'. In Proceedings of the 2016 IEEE International Conference on Big Data (BigData 2016), December 5-8, 2016, Washington DC, USA.

[C11] **Giannakouris, V., Papailiou, N., Tsoumakos**, **D., Koziris, N.,** 2016. 'MuSQLE: Distributed SQL Query Execution Over Multiple Engine Environments'. In Proceedings of the 2016 IEEE International Conference on Big Data (BigData 2016), December 5-8, 2016, Washington DC, USA.

[C12] **Korasidis, N., Giannakopoulos, I., Doka, K., Tsoumakos, D., Koziris, N.,** 2016. 'Fair, Fast and Frugal Large-Scale Matchmaking for VM Placement'. In Proceedings of the 2nd International Workshop on Algorithmic Aspects of Cloud Computing (ALGOCLOUD 2016), in conjunction with the ALGO 2016 Conference, August 22, 2016, Aarhus, Denmark.

[C13] **Giannakopoulos, I., Konstantinou, I., Tsoumakos, D., Koziris, N.**, 2016. 'Recovering from Cloud Application Deployment Failures through Re-execution'. In Proceedings of the 2nd International Workshop on Algorithmic Aspects of Cloud Computing (ALGOCLOUD 2016), in conjunction with the ALGO 2016 Conference, August 22, 2016, Aarhus, Denmark.

[C14] **Papailiou, N., Doka, K., Giannakouris, V., Papaioannou, V., Tsoumakos**, **D., Koziris, N.,** 2016. 'Robust and Adaptive Multi-Engine Analytics using IReS (demo paper).' In Proceedings of the 10th International Workshop on Enabling Real-Time Business Intelligence (BIRTE 2016), in conjunction with the VLDB 2016 Conference, New Delhi, India, September 9, 2016.

[C15] **Mytilinis, I., Tsoumakos, D., Koziris, N.,** 2016. 'Distributed Wavelet Thresholding for Maximum Error Metrics'. In Proceedings of the 2016 ACM SIGMOD/PODS International Conference on Management of Data, June 26 - July 1, 2016, San Francisco, USA.

[C16] **Doka, K., Filatov, M., Giannakouris, V., Kantere, V., Koziris, N., Mantas, C., Papailiou, N., Papaioannou, V., Tsoumakos**, **D.,** 2016. 'Optimizing, Planning and Executing Analytics Workflows over Multiple Engines'. In Proceedings of the 1st International Workshop on Multi-Engine Data AnaLytics (MEDAL) (demo paper), in conjunction with the EDBT/ICDT 2016 Joint Conference, Bordeaux, France, March 15, 2016.

[C17] **Giannakopoulos, I., Karras, P., Tsoumakos, D., Doka, K., Koziris, N.**, 2015. 'An Equitable Solution to the Stable Marriage Problem'. In Proceedings of the 27th IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2015), 9-11 November, Vietri sul Mare, Italy.

[C18] **K. Doka, K., Xue, M., Tsoumakos, D., Karras, P., Cuzzocrea, A., Koziris, N.**, 2015. 'Heterogeneous k-Anonymization with High Utility'. In Proceedings of the 2nd International Workshop on Privacy and Security of Big Data (in conjunction with the 2015 IEEE International Conference on Big Data), October 29, 2015, Santa Clara, CA, USA.

[C19] **Papailiou, N., Tsoumakos, D., Konstantinou, I., Karras, P., Koziris, N.,** 2015. 'Graph-Aware, Workload-Adaptive SPARQL Query Caching'. In Proceedings of the 2015 ACM SIGMOD/PODS International Conference on Management of Data, May 31- June 4, 2015, Melbourne, Australia.

[C20] **Doka, K., Papailiou, N., Tsoumakos, D., Mantas, C., Koziris, N.,** 2015. 'IReS: Intelligent, Multi-Engine Resource Scheduler for Big Data Analytics Workflows'. In Proceedings of the 2015 ACM SIGMOD/PODS International Conference on Management of Data (Demo Track), May 31- June 4, 2015, Melbourne, Australia.

[C21] **Naskos, A., Stachtiari, E., Gounaris, A., Katsaros, P., Tsoumakos, D., Konstantinou, I., Sioutas, S.,** 2015. 'Dependable Horizontal Scaling Based On Probabilistic Model Checking'. In proceedings of the 15th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID 2015), May 4-7, 2015, Shenzhen, Guangdong, China.

[C22] **Doka, K., Xue, M., Tsoumakos, D., Karras, P.,** 2015. 'k-Anonymization by Freeform Generalization'. In Proceedings of the 10th ACM Symposium on Information, Computer and Communications Security (ASIACCS 2015), Singapore, April 14-17, 2015.

[C23] **Mytilinis, I., Tsoumakos, D., Kantere, V., Nanos, A., Koziris, N.,** 2015. 'I/O Performance Modeling for Big Data Applications over Cloud Infrastructures'. In Proceedings of the 2015 IEEE International Conference on Cloud Engineering (IC2E 2015), 9-13 March, Tempe, AZ, USA.

[C24] **Giannakopoulos, I., Tsoumakos, D., Papailiou, N., Koziris, N.,** 2015. 'PANIC: Modeling Application Performance over Virtualized Resources'. In Proceedings of the 2015 IEEE International Conference on Cloud Engineering (IC2E 2015), 9-13 March, Tempe, AZ, USA.

[C25] **Kordoni, V., Cholakov, K., Egg, M., Way, A., Birch, A., Kermanidis, K., Sosoni, V., Tsoumakos, D., Van den Bosch, A., Hendrickx, I., Papadopoulos, M., Georgakopoulou, P., Gialama, M., Van Zaanen, M., Buliga, I., Jermol, M., Orlic, D., 2015.** 'TraMOOC: Translation for Massive Open Online Courses'. In Proceedings of the 18th Annual Conference of the European Association for Machine Translation (EAMT2015), May 2015, European Association for Machine Translation (EAMT) Antalya, Turkey.

[C26] **N. Nodarakis, N., Pitoura, E., Sioutas, S., Tsakalidis, A., Tsoumakos, D., Tzimas, G**., 2014. 'Efficient Multidimensional AkNN Query Processing in the Cloud'. In Proceedings of the 25th International Conference on Database and Expert Systems Applications (DEXA 2014), Munich, Germany, September 1-5, 2014.

[C27] **Papailiou, N., Tsoumakos, D., Konstantinou, I., Karras, P., Koziris, N.,** 2014. 'H2RDF+: An Efficient Data Management System for Big RDF Graphs'. In Proceedings of the 2014 ACM SIGMOD/PODS International Conference on Management of Data (Demo Track), Snowbird, Utah, USA.

[C28] **Papailiou, N., Tsoumakos, D., Konstantinou, I., Karras, P., Koziris, N.,** 2014. 'Scalable Indexing and Adaptive Querying of RDF Data in the Cloud'. In Proceedings of the 6th International Workshop on Semantic Web Information Management - SWIM 2014, Snowbird, Utah, USA.

[C29] **Giannakopoulos, I., Papailiou, N., Mantas, C., Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2014. 'CELAR: Automated Application Elasticity Platform'. In proceedings of the 2014 IEEE International Conference on Big Data (BigData 2014), Washington DC, USA.

[C30] **Tsoumakos, D., Mantas, C.,** 2013. 'The Case for Multi-engine Data Analytics'. In Proceedings of the 2013 Workshop on Middleware for HPC and Big Data Systems (MHPC'13, part of Euro-Par 2013), Aachen, Germany, August 27, 2013.

[C31] **Papailiou, N., Konstantinou, I., Tsoumakos, D., Karras, P., Koziris, N.,** 2013. 'H2RDF+: Highperformance Distributed Joins over Large-scale RDF Graphs'. In proceedings of the 2013 IEEE International Conference on Big Data (BigData 2013), Santa Clara, CA, USA, October 6-9 2013.

[C32] **Konstantinou, I., Tsoumakos, D., Koziris, N., Mytilinis, I.,** 2013. 'DBalancer: Distributed Load Balancing for NoSQL Data-stores'. In Proceedings of the 2013 ACM SIGMOD/PODS International Conference on Management of Data (Demo Track), New York, New York, USA, June 22-27, 2013.

[C33] **Konstantinou, I., Kantere, V., Tsoumakos, D., Koziris, N.,** 2013. 'COCCUS: Self-configured Cost-based Query Services in the Cloud'. In Proceedings of the 2013 ACM SIGMOD/PODS International Conference on Management of Data (Demo Track), New York, New York, USA, June 22-27, 2013.

[C34] **Tsoumakos, D., Konstantinou, I., Boumpouka, C., Sioutas, S., Koziris, N.,** 2013. 'Automated, Elastic Resource Provisioning for NoSQL Clusters Using TIRAMOLA'. In Proceedings of the 13th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Delft, The Netherlands, May 13-16, 2013.

[C35] **Konstantinou, I., Angelou, E., Tsoumakos, D., Boumpouka, C., Koziris, N., Sioutas, S.,** 2012. 'TIRAMOLA: Elastic NoSQL Provisioning through a Cloud Management Platform'. In proceedings

of the 2012 ACM SIGMOD/PODS International Conference on Management of Data (Demo Track), Scottsdale, Arizona, USA, May 20-24, 2012.

[C36] **Angelou, E., Papailiou, N., Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2012. 'Automatic Scaling of Selective SPARQL Joins Using the TIRAMOLA System' In Proceedings of the 4th International Workshop on Semantic Web Information Management, Scottsdale, Arizona, USA, May 20, 2012

[C37] **Papailiou, N., Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2012. 'H$_2$RDF: Adaptive Query Processing on RDF Data in the Cloud'. In proceedings of the 21st International World Wide Web Conference (WWW2012 Demo Track), Lyon, France, April 16-20 2012.

[C38] **Antonopoulos, P., Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2012. 'Efficient Updates for Web-scale Indexes over the Cloud'. In proceedings of the Data Management in the Cloud (DMC) Workshop, Collocated with ICDE 2012, Washington, DC, April 5th 2012.

[C39] **Sioutas, S., Panaretos, A., Karydis, I., Tsoumakos, D.,** 2012. 'SART: Dynamic P2P Query Processing in Sensor Networks with probabilistic guarantees'. In proceedings of the 27th Symposium on Applied Computing (ACM SAC 2012), March 26-30, 2012, Riva del Garda (Trento), Italy.

[C40] **Sakkopoulos, E., Sioutas, S., Papaloukopoulos, G., Panaretos, A., Tsoumakos, D., Saltou, A.,** 2012. 'DREAM: A Distributed fRamework for customized dEployment of a vAriety of indexing engines over Million-node overlays'. In proceedings of the 27th Symposium on Applied Computing (ACM SAC 2012), March 26-30, 2012, Riva del Garda (Trento), Italy.

[C41] **Konstantinou, I., Angelou, E., Boumpouka, C., Tsoumakos, D., Koziris, N.,** 2011. 'On the Elasticity of NoSQL Databases over Cloud Management Platforms'. In proceedings of the 20th ACM Conference on Information and Knowledge Management (CIKM 2011) – poster paper, October 24-28, 2011 – Glasgow, Scotland.

[C42] **Doka, A., Tsoumakos, D., Koziris, N.,** 2011. 'KANIS: Preserving k-Anonymity Over Distributed Data'. In proceedings of the 5th International Workshop on Personalized Access, Profile Management, and Context Awareness in Databases (PersDB 2011), September 2, 2011 - Seattle, WA.

[C43] **Asiki, A., Tsoumakos, D., Koziris, N.,** 2011. 'LinkedPeers: A Distributed System for Interlinking Multidimensional Data'. In proceedings of the 22nd International Conference on Database and Expert Systems Applications (DEXA 2011), Toulouse, France, August 29 - September 2, 2011.

[C44] **Doka, A., Tsoumakos, D., Koziris, N.,** 2010. 'Brown Dwarf: A P2P Data-Warehousing System'. In proceedings of the 19th ACM International Conference on Information and Knowledge Management (demo track), Toronto, Canada, October 26-30, 2010.

[C45] **Doka, A., Tsoumakos, D., Koziris, N.,** 2010. 'Distributing the Power of OLAP'. In proceedings of the 19th ACM International Symposium on High Performance Distributed Computing (HPDC'10), Chicago, Illinois, USA, June 23-25, 2010.

[C46] **Doka, A., Tsoumakos, D., Koziris, N.,** 2010. 'Efficient Updates for a Shared Nothing Analytics Platform'. In Proceedings of the International Workshop on Massive Data Analytics over the Cloud (MDAC2010) in conjunction with WWW 2010, Raleigh, North Carolina, USA, April 26, 2010.

[C47] **Konstantinou, I., Angelou, E., Tsoumakos, D., Koziris, N.,** 2010. 'Distributed Indexing of Web Scale Datasets for the Cloud'. In Proceedings of the International Workshop on Massive Data Analytics over the Cloud (MDAC2010) in conjunction with WWW 2010, Raleigh, North Carolina, USA, April 26, 2010.

[C48] **Zisimos, A., and Doka, K., Chazapis, A., Tsoumakos, D., and Koziris, N.,** 2009. 'Optimizing Data Management in Grid Environments'. In Proceedings of the 11th International Symposium on Distributed Objects, Middleware, and Applications (DOA'09), Vilamoura, Algarve-Portugal, Nov01- 03, 2009.

[C49] **Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2009. 'Measuring the Cost of Online Load-Balancing in Distributed Range-Queriable Systems'. In Proceedings of the Ninth International Conference on Peer-to-Peer Computing, Seattle, WA, USA, 8-11 Sept. 2009.

[C50] **Asiki, A., Tsoumakos, D., Koziris, N.,** 2009. 'An Adaptive On-line System for Efficient Processing of Hierarchical Data', In Proceedings of the 18th International Symposium on High Performance Distributed Computing (HPDC), Munich, Germany, 11-13 June 2009.

[C51] **Doka, A., Tsoumakos, D., Koziris, N.,** 2008. 'HiPPIS: An Online P2P System for Efficient Lookups on d-Dimensional Hierarchies', In Proceedings of the 10th International Workshop on Web Information and Data Management, Napa Valley, California, 26-30 October 2008.

[C52] **Konstantinou, I., Tsoumakos, D., Koziris, N.,** 2008. 'PASS It ON (PASSION): An Adaptive Online Load-Balancing Algorithm for Distributed Range-Query specialized Systems', In

Proceedings of the 16th International Conference on Cooperative Information Systems (Poster Paper), Monterrey, Mexico, 12-14 November 2008.

[C53] **Asiki, A., Doka, A., Tsoumakos, D., Koziris, N.**, 2008. 'Online Querying of Concept Hierarchies in P2P Systems', In Proceedings of the 16th International Conference on Cooperative Information Systems, Monterrey, Mexico, 12-14 November 2008.

[C54] **Asiki, A., Doka, A., Tsoumakos, D., Koziris, N.**, 2008. 'Support for Concept Hierarchies in DHTs', In Proceedings of the 8th International Conference on Peer-to-Peer Computing, Aachen University, Germany, 8-11 September 2008.

[C55] **Kantere, V., Tsoumakos, D., Sellis, T.**, 2008. 'Semantic Grouping of Social Networks in P2P Database Settings'. In proceedings of the 18th International Conference on Database and Expert Systems Applications (DEXA '07), Regensburg, Germany, 3-7 September 2007.

[C56] **Tsoumakos, D., Roussopoulos N.**, 2006. 'APRE: An Adaptive Replication Scheme for Unstructured Overlays'. In proceedings of the 14th International Conference on Cooperative Information Systems (CoopIS 2006), Montpellier, France, Nov 1-Nov 3 2006.

[C57] **Tsoumakos, D., Roussopoulos N.**, 2006. 'Analysis and Comparison of P2P Search Methods'. In proceedings of the first International Conference on Scalable Information Systems (INFOSCALE 2006), Hong Kong , May 30-June 1 2006.

[C58] **Tsoumakos, D., Roussopoulos N.**, 2005. 'AGNO: An Adaptive Group Communication Scheme for Unstructured P2P Networks'. In proceedings of the 2005 Euro-Par Conference, Lisbon, Portugal, August 31-September 2, 2005.

[C59] **Bitsakos, K., Tsoumakos, D., Roussopoulos N., Alimonos, I.**, 2005. 'A Framework for Distributed Human Tracking'. In proceedings of the 2005 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'05), Las Vegas, NV, USA, June 27-30, 2005.

[C60] **Kantere, V., Tsoumakos, D., Roussopoulos N.**, 2004. 'Querying Structured Data in an Unstructured P2P System'. In proceedings of the 6th ACM International Workshop on Web Information and Data Management (WIDM 2004), Washington, DC, USA, November 12-13, 2004.

[C61] **Tsoumakos, D., Roussopoulos N.**, 2004. 'A Framework for Sharing Voluminous Content in P2P Systems'. In proceedings of the 2004 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'04), Las Vegas, Nevada, USA, June 21-24, 2004.

[C62] **Tsoumakos, D., Roussopoulos N.**, 2003. 'Adaptive Probabilistic Search for Peer-to-Peer Networks'. In proceedings of the 3rd IEEE International Conference on P2P Computing, Linkoping, Sweden, Sept 1-3 2003.

[C63] **Tsoumakos, D., Roussopoulos N.**, 2003. 'A Comparison of Peer-to-Peer Search Methods'. In proceedings of the Sixth International Workshop on the Web and Databases, San Diego, CA, USA, June 12-13 2003.

## 0.1.3.5. Conference Proceedings

[CP01] 'Algorithmic Aspects of Cloud Computing'. First International Workshop, ALGOCLOUD 2015, Patras, Greece, September 14-15, 2015. Revised Selected Papers
**Editors: Karydis, I., Sioutas, S., Triantafillou, P., Tsoumakos, D.**

## 0.1.3.6. Consulting - Evaluations

[A01] Evaluating project "ΕΙΚΟΣ : ΘΕΩΡΗΤΙΚΗ ΚΑΙ ΑΛΓΟΡΙΘΜΙΚΗ ΘΕΜΕΛΙΩΣΗ ΓΙΑ ΠΡΟΣΩΠΟΚΕΝΤΡΙΚΑ ΣΥΝΕΡΓΑΤΙΚΑ ΠΛΗΡΟΦΟΡΙΑΚΑ ΣΥΣΤΗΜΑΤΑ", (under the ΘΑΛΗΣ programme), 2015.

[A02] Swiss National Science Foundation evaluator, Project funding in Mathematics, Natural sciences and Engineering (division II), 2018

## 0.1.3.7. Other Publications

[OP01] **T. Bakogiannis, I. Giannakopoulos, D. Tsoumakos and N. Koziris:** 'A Similarity-based Approach to Modeling Graph Operators'. *CoRR abs/1802.05536 (2018)*

[OP02] **Giannakopoulos, D. Tsoumakos and N. Koziris:** 'A Decision Tree Based Approach Towards Adaptive Profiling of Distributed Applications'. *CoRR abs/1704.02855 (2017)*

[OP03] **S. Sioutas, K. Tsichlas, A. Kosmatopoulos, A. Papadopoulos, D. Tsoumakos, K. Doka:** 'Skyline Queries in O(1) time?' *CoRR abs/1709.03949 (2017)*

# 0.1.4. Teaching Experience

## 0.1.4.1 Teaching

**2010-2020** Department of Informatics, Ionian University
  **Teaching**
  **Undergraduate Classes:**
  [T 01] Big Data Management (since Fall 2014)
  [T 02] HY400 – Operating Systems (since Fall 2011)
  [T 03] HY110 – Introduction to Computer Programming (2010 – 2013, co-lecturer)
  [T 04] HY221 – Computer Networks II (2012-2013)
  [T 05] HY270 – Internet Technologies (since Spring 2011)
  [T 06] HY110 – Computer Programming (2011-2016, co-lecturer)
  [T 07] HY301 – Database Systems II (2018)
  [T 08] HY300 – Database Systems I (2019)
  [T 09] HY315 – Information Systems Analysis and Design (2010)
  **Graduate Classes:**
  [T 08] Advanced Topics in Language Processing (2010, co-lecturer)
  [T 09] MSC100 – Advanced Topics in Data Base Technologies (2012, co-lecturer)
  [T 10] PMS-BIOINF103 – Programming Languages and Biological Databases (2016, co-lecturer)
  [T 11] Semantic Web Programming (2016-2018, co-lecturer)
  [T 12] MSC-DIGAPPINNOV-102 - Big Data Analytics (2019-2020, co-lecturer)
  [T 13] MSC-DDI183 - Data Processing and Analytics (2020)

**2016** Department of Informatics and Telecommunications of the University of Athens
  **Teaching**
  **Classes:**
   [T 01] M123 - Distributed Systems (Graduate Course)

**2009-2010** Computer Science Department, University of Cyprus
  **Teaching**
  **Classes:**
  [T 01]      ΕΠΛ602 – Foundations of Internet Technologies (Graduate Course)
  [T 02]      ΕΠΛ012 – Web Design Technologies
  [T 03]      ΕΠΛ003 – Computer Science and Information Systems
  [T 04]      ΕΠΛ132 – Programming Principles II

**2000-2001** Computer Science Department, University of Maryland
  **Teaching Assistant**
  **Classes:**
  [TA 01]      CMSC 214 – Computer Science II ( C++ )
  [TA 02]      CMSC 424 – Data Base Systems

**1999-2000** School of Electrical and Computer Engineering, National Technical University of Athens
  **Teaching Assistant**
  **Classes:**
  [TA 01]      Data Structures

## 0.1.4.2. Advising of Doctoral Students

## PhD Completions (co-supervision at NTUA)

| Student | Title | Year |
|---|---|---|
| Aikaterini Doka | Distributed Database Systems | 2007-2011 |

| Ioannis Konstantinou | Distributed Systems | 2007-2011 |
| Athanasia Asiki | Distributed / Grid Systems | 2007-2012 |
| Nikolaos Papailiou | Scalable, workload-based data management for unstructured data | 2011-2016 |
| Giagkos Mytilinis | Distributed Data Management and Data Compression | 2012-2019 |
| Ioannis Giannakopoulos | Data Management and Application Profiling in Cloud Platforms | 2012-2018 |

Dr. Tsoumakos is currently supervising the following students:

| **Student** | **Area** | **Year** |
| --- | --- | --- |

## 0.1.5 Professional and Research Experience

### 0.1.5.1 Professional Positions

#### 0.1.5.1.1 Academic and Research Positions

2020-now    Director of the Graduate Programme: "Research Directions in Computer Science"
Department of Informatics
Ionian University

2017-now    Associate Professor
Department of Informatics
Ionian University

2012-2017    Assistant Professor
Department of Informatics
Ionian University

2010- 2012    Visiting Professor
Department of Informatics
Ionian University

2009- 2010    Visiting Professor
Department of Computer Science
University of Cyprus

2006- now    Postdoctoral/ Researcher position
Computing Systems Lab
School of Electrical and Computer Engineering
National Technical University of Athens

2006- 2002    Graduate Researcher
Institute for Systems Research
University of Maryland

#### 0.1.5.1.2 Consulting Services

#### 0.1.5.1.3 Other Professional Positions

1999 - 2000    Database programmer for Energy Database
School of Electrical and Computer Engineering
National Technical University of Athens

1998 - 1999    Web Developer
GIS Laboratory, School of Architecture
National Technical University of Athens

## 0.1.5.2 Funded Research Projects

2018-2021    *HiDALGO project* – **HPC and Big Data Technologies for Global Systems**, H2020-INFRAEDI-2018-1. Our society faces a wide range of global challenges in different areas such as sociology, economy, ecology and technology. Solving the most vital problems in these fields often requires the analysis of a huge amount of data, and the utilization of appropriate methods and facilities for ample computations. In HiDALGO we develop a computational and data analytics environment, which enables systematic collaboration between scientists with different background and facilitates a profound understanding of several major global challenges. This will allow the decision makers to predict possible outcomes of certain social processes and act accordingly.

2015-2018    *TraMOOC project* – **Translation for Massive Open Online Courses,** H2020-644333. Massive Open Online Courses have been growing rapidly in size and impact. Yet the language barrier constitutes a major growth impediment in reaching out to all peoples and educating all citizens. TraMOOC aims at tackling this impediment by developing high-quality translation of all types of text genre included in MOOCs (e.g. assignments, tests, presentations, lecture subtitles, blog text) from English into eleven European and BRIC languages (DE, IT, PT, EL, DU, CS, BG, CR, PL, RU, ZH) that constitute strong use cases, are hard to translate into and have weak MT support, thus complying with the call objectives.

2014-2017    *ASAP project* – **An Adaptive, highly Scalable Analytics Platform**, FP7-619706, Project Technical Leader. This project proposes a unified, open-source execution framework for scalable data analytics. Data analytics tools have become essential for harnessing the power of our era's data deluge. Current technologies are restrictive, as their efficacy is usually bound to a single data and compute model, often depending on proprietary systems. The main idea behind ASAP is that no single execution model is suitable for all types of tasks and no single data model (and store) is suitable for all types of data (project Technical Leader).

2012-2015    *CELAR project* – **Automatic, multi-grained elasticity-provisioning for the Cloud**, FP7-317790, Project Technical Leader. The vision of the CELAR project is to provide automatic, multi-grained resource allocation for cloud applications. This enables the commitment of just the right amount of resources based on application demand, performance and requirements, results in optimal use of infrastructure resources and significant reductions in administrative costs (project Technical Leader).

2010- 2013   *ARCOMEM Project* – **From Collect-All Archives to Community Memories** – Leveraging the Wisdom of the Crowds for Intelligent Preservation, FP7-ICT-2009.4.1, team technical leader. The aim of this project is to leverage the wisdom of the crowds, appearing through knowledge in social media, to assist in preservation and semantic annotation of digital content.

2006- 2009   *GREDIA Project* – **Grid Enabled Access to Rich media Content**, FP6-34363, project team leader. This project aims at the design and implementation of an efficient multimedia storage, querying and management system in grid systems.

2002-2006    *CIP-URI ARMY Research Project*: "**Distributed Immune Systems for Wireless Networks"**, graduate researcher. The aim of this research project was the design and development of algorithms in order to assist in the prompt and effective detection of intrusions in Mobile Ad-hoc Networks (intrusion detection in MANETS).

# 0.1.6. Other

## 0.1.6.1. Various responsibilities in International Journals and Conferences
## 0.1.6.1.1. Journals

### 0.1.6.1.1.1. Editor in International Journals

Editor in Special issue of Frontiers (https://www.frontiersin.org/) "Frontiers in Big Data Time Series": https://www.frontiersin.org/research-topics/14931/big-data-time-series

### 0.1.6.1.1.2. Referee in International Journals

[1]     ACM Transactions on Internet Technology
[2]     Data and Knowledge Engineering Journal (DKE)
[3]     IEEE Transactions on Learning Technologies
[4]     Information Sciences
[5]     Journal of Computer Science and Technology (JCST)
[6]     Computer Communications (Elsevier)
[7]     IEEE Transactions on Parallel and Distributed Systems (TPDS)
[8]     Information Systems
[9]     IEEE Transactions on Knowledge and Data Engineering (TKDE)
[10]    Peer-to-Peer Networking and Applications (PPNA)
[11]    Concurrency and Computation: Practice and Experience
[12]    Computers & Electrical Engineering (Special issue on "New Trends in Humanistic Informatics: Implementations and Applications")
[13]    Algorithms (Special Issue on "Humanistic Data Processing")
[14]    The Knowledge Engineering Review (KER)
[15]    Distributed and Parallel Databases (DAPD - Springer)
[16]    Big Data Research (BDR - Elsevier)
[17]    Computing (COMP - Springer)
[18]    International Journal of Cooperative Information Systems (IJCIS - World Scientific)
[19]    ACM Computing Surveys (ACM CSUR)
[20]    The Computer Journal (COMPJ)
[21]    Future Generation Computer Systems (FGCS - Elsevier)
[22]    Computers & Electrical Engineering (COMPELECENG - Elsevier)
[23]    IEEE Transactions on Cloud Computing (TCC-CS)
[24]    International Journal of Metadata, Semantics and Ontologies (IJMSO)
[25]    ACM Transactions on Knowledge Discovery from Data (TKDD)

## 0.1.6.1.2. Conferences

Track Chair – 19th IEEE/ACM International Symposium in Cluster, Cloud, and Grid Computing (CCGrid 2019)
PC member – International Conference on Theory and Practice of Digital Libraries (TPDL 2011)
PC member - International Workshop on Using P2P, Grid and Agents for the Development of Content Networks (upgrade-cn2011)
PC member – Web Information and Data Management (WIDM 2012)
PC member – First International Workshop on Service Clouds in the Enterprise and Beyond (SCEB'12)
PC member – IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2013, 2014, 2016, 2017, 2020)
PC member – IEEE International Conference on Big Data 2013 (IEEE BigData 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020)
PC member – Workshop on Middleware for HPC and Big Data Systems (MHPC'13)
PC member – International Conference on Smart Grids and Green IT Systems (SMARTGREENS 2013, 2016, 2017, 2018, 2019, 2020)
PC member – World Congress on Geriatrics and Neurodegenerative Disease Research (GeNeDis 2014)
PC member – IEEE International Conference on Sustainable Computing and Communications (SustainCom 2014)
PC member – ACM SIGMOD/PODS Conference (SIGMOD 2015)
PC member – International Workshop on NoSQL Databases, Emerging Database Technologies and Applications (NoSQL-Net'15)
PC member – 13th International Conference on Economics of Grids, Clouds, Systems, and Services (GECON 2016)
PC member – Top-K Shortest Path in Large Typed RDF Graphs Challenge, ESWC Challenges, (ESWC 2016)
PC member – The International Workshop on Semantic Big Data (SBD 2016, 2017, 2019, 2020). In conjunction with ACM SIGMOD 2016
PC member – IEEE SERVICES 2016 - Emerging Technology Track on Elastic Systems
PC member –International Workshop on Algorithmic Aspects of Cloud Computing (ALGOCLOUD 2016, 2017)
PC member – International Symposium on Pervasive Systems, Algorithms, and Networks (I-SPAN 2017)
PC member – IEEE International Conference on Data Engineering (ICDE 2017, 2018)

PC member – International Conference on Machine Learning and Data Science (ICMLDS 2017)

PC member – ACM Conference on Information and Knowledge Management (CIKM 2017, 2018, 2019, 2020)

PC member – IEEE International Conference on Cloud Computing Technology and Science (CloudCom 2018)

PC member – International Conference on Graph Computing (GC 2019, 2020)

PC member – IEEE International Conference on Big Data Science and Engineering (BigDataSE 2020)

## 0.1.6.1.2.1. Scientific – Organizing Committee Member

2014 – IEEE BigData 2014 Doctoral Consortium co-Chair

2015 – ALGOCLOUD 2015 co-Chair (collocated with Algo 2015)

2016 – First International Workshop on Multi-Engine Data AnaLytics (MEDAL 2016) co-Chair - collocated with EDBT/ICDT 2016.

2016 – Natural, Unconventional, and Bio-inspired Algorithms and Computation Methods Workshop (NUBACoM 2016) co-Chair – collocated with GeNeDis 2016

2018 – 10th IEEE International Conference on Cloud Computing Technology and Science (CloudCom 2018) Workshop and Tutorial co-Chair

2018 - Electrical Engineering STudents' European association (EESTech) Challenge Organizer

2019 - IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2019) Cloud Computing track chair

## 0.1.6.1.2.2. Referee in International Conferences

| Year | Conference | Abbrev. |
|------|-----------|---------|
| 2002 | ACM SIGMOD International Conference on Management of Data | SIGMOD |
| 2003 | International Conference on Very Large Data Bases | VLDB |
| 2004 | International Conference on Distributed Computing Systems | ICDCS |
| 2004 | Agents and Peer-to-Peer Computing | AP2PC |
| 2004 | IEEE International Conference on P2P Computing | P2P |
| 2005 | Americas Conference on Information Systems | AMCIS |
| 2007 | ACM's Special Interest Group on Management Of Data | SIGMOD |
| 2008 | International Workshop on Data Management in Peer-to-peer systems | DAMAP |
| 2008 | International Conference on Parallel Processing | ICPP |
| 2008 | IEEE International Conference on Data Engineering | ICDE |
| 2009 | International Conference on Very Large Data Bases | VLDB |
| 2011 | International Conference on Theory and Practice of Digital Libraries | TPDL |
| 2012 | Web Information and Data Management | WIDM |
| 2012 | First Intl Workshop on Service Clouds in the Enterprise and Beyond | SCEB |
| 2012 | International Symposium on Cluster, Cloud and Grid Computing | CCGrid |
| 2013 | Workshop on Middleware for HPC and Big Data Systems | MHPC |
| 2013 | IEEE International Conference on Big Data | BigData |
| 2014 | International Conference on Smart Grids and Green IT Systems | Smartgreens |
| 2014 | International Symposium on Cluster, Cloud and Grid Computing | CCGrid |
| 2014 | World Congress on Geriatrics and Neurodegenerative Disease Research | GeNeDis |
| 2014 | International Conference on Sustainable Computing and Communications | SustainCom |
| 2014 | IEEE International Conference on Big Data | BigData |
| 2015 | ACM SIGMOD International Conference on Management of Data | SIGMOD |
| 2015 | IEEE International Conference on Big Data | BigData |
| 2015 | Workshop on NoSQL Databases, Emerging Database Technologies and Applications | NoSQL-Net |
| 2016 | International Conference on Economics of Grids, Clouds, | GECON |

| | | |
|---|---|---|
| | Systems, and Services | |
| 2016 | IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing | CCGrid |
| 2016 | Top-K Shortest Path in Large Typed RDF Graphs Challenge | ESWC Challenges |
| 2016 | IEEE International Conference on Big Data | BigData |
| 2016 | International Workshop on Algorithmic Aspects of Cloud Computing | ALGOCLOUD |
| 2016 | International Workshop on Semantic Big Data | SBD |
| 2016 | IEEE SERVICES 2016 - Emerging Technology Track on Elastic Systems | SERVICES |
| 2016 | 6th International Conference on Smart Cities and Green ICT Systems | SMARTGREENS |
| 2017 | 33rd IEEE International Conference on Data Engineering | ICDE |
| 2017 | International Workshop on Semantic Big Data | SBD |
| 2017 | International Workshop on Algorithmic Aspects of Cloud Computing | ALGOCLOUD |
| 2017 | International Symposium on Pervasive Systems, Algorithms, and Networks | I-SPAN |
| 2017 | IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing | CCGRID |
| 2017 | ACM Conference on Information and Knowledge Management | CIKM |
| 2017 | International Conference on Machine Learning and Data Science | ICMLDS |
| 2017 | IEEE International Conference on Big Data | BigData |
| 2018 | 34th IEEE International Conference on Data Engineering | ICDE |
| 2018 | IEEE International Conference on Big Data | BigData |
| 2018 | IEEE International Conference on Cloud Computing Technology and Science | CloudCom |
| 2018 | International Conference on Smart Cities and Green ICT Systems | SMARTGREENS |
| 2018 | ACM Conference on Information and Knowledge Management | CIKM |
| 2019 | IEEE International Conference on Big Data | BigData |
| 2019 | First International Conference on Graph Computing | GC |
| 2019 | ACM Conference on Information and Knowledge Management | CIKM |
| 2019 | The International Workshop on Semantic Big Data | SBD |
| 2019 | International Conference on Smart Cities and Green ICT Systems | SMARTGREENS |
| 2020 | International Conference on Smart Cities and Green ICT Systems | SMARTGREENS |
| 2020 | The International Workshop on Semantic Big Data | SBD |
| 2020 | IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing | CCGrid |
| 2020 | 14th IEEE International Conference on Big Data Science and Engineering | BigDataSE |
| 2020 | ACM Conference on Information and Knowledge Management | CIKM |
| 2020 | IEEE International Conference on Big Data | BigData |
| 2020 | Second International Conference on Graph Computing | GC |

## 0.1.6.3. Main Speaker in Specialized Seminars

| | |
|---|---|
| 18/03/2008 | University of Crete – Foundation for Research and Technology |
| Multiple | University of Maryland – Comp. Sci. Dept, Database Chat |
| 05/03/2009 | University of Crete – Department of Computer Science |
| 22/06/2009 | Technical University of Crete – Dept. of Electrical and Computer Engineering |
| 04/11/2009 | University of Cyprus – Computer Science Department |
| 23/02/2010 | University of Ioannina – Computer Science Department |
| 01/04/2011 | National and Kapodistrian University of Athens – Department of Informatics |
| 19/05/2011 | National Technical Un. of Athens – Dept. of Electrical and Computer Engineering |
| 02/03/2012 | University of Cyprus – Computer Science Department |
| 03/10/2016 | University of Cyprus – Computer Science Department |
| 08/12/2016 | University of Maryland – Department of Computer Science |
| 15/09/2017 | Technical Un. of Athens – Dept. of Electrical and Computer Engineering |

## 0.2. Citations

Up to date (30-11-2020), there have been over 2172 citations, **h-index:** 19, **g-index:** 45 (Publish or Perish and Google Scholar).