Selçuk Topal

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Research Interests	Computer Science: **Decentralized Systems, Blockchain, Web3.0**, (Federated) Machine Learning Mathematics: Pure and Applied Logic (logic, language and information), Decision Making, Graph Theory.
Programming Skills	**Solidity, Dapps, Web3py(js),** Python, Prolog, Haskell, Scikit-learn, OpenCV, Flask, Streamlit, JavaScript, LLM https://github.com/selcuktopal80/Fetch-Dapp https://github.com/selcuktopal80/Blockchain-Data-Science-Summer-Course
Lectured Summer Course	Blockchain and (Federated) Machine Learning Dapps https://github.com/selcuktopal80/Blokzincir-ML-Kursu https://www.linkedin.com/posts/selcuktopal80_blockchain-web3-machinelearni https://amethyst-electronic-moth-441.mypinata.cloud/ipfs/QmbJacbe8tHiYu1n
Teaching	(Graduate) **Mathematical Fundamentals of Blockchain and Smart Contract** (Graduate) **Mathematics Fundamentals for Artificial Intelligence and Data Science Applications of Logical Systems** (Graduate) **Mathematical Fundamentals and Applications of Neural Networks** (Graduate) Mathematical Logic (Graduate) Data Structures (Graduate) **Logical Programming** (Undergraduate) Discrete Mathematics (Undergraduate) Linear Algebra (Undergraduate) **Data Analysis** (Undergraduate) Mathematical Statistics
Current Projects	1) Blockchain Driven Robotics (Blockchain Student Community Advisory at Gebze Technical University)

Construction of a Robot vs Robot, Robot vs Human game system governed by a game contract completely deployed in the EVM. https://shorturl.at/ehtS0
2) LLM based Smart Contract Audit DApp (Ready to deploy)
3) LLM based Blockchain Business Review DApp (Ready to deploy)
3) LLM based CadCad DApp for Token Economic Models (Ready to deploy)
4) Syllogistic Logic Implementations in Smart Contract Languages
5) Numpy Type Vectorization in Smart Contract Languages (For Big Data)
6) Proof of Authority (Layer 2 EVM) Blockchain (Ready to deploy)

Supervised Graduate Thesis

1. Yasin Akunsoy, Master Thesis: Algorithmic Analysis and A Computer Implementation of A Syllogistic Logic Composed of Cardinality Comparisons of Nouns and Intersecting Adjectives, 2017, Bitlis Eren University.
2. Merve Gokcen Sayin, Master Thesis: On Lattices of Neutrosophic Sets. 2017, Bitlis Eren University.
3. Akurek Yunus Emre, Master Thesis: Decision making through nano topology: A mathematics education study. 2021, Bitlis Eren University.
4. Ziya Karakoc, Master Thesis: **A DAPPlication That Provides Information Storage and Security with the Help of Stegonography and Blockchain**, Bitlis Eren University.
5. Ozlem Seydalioglu, Master Thesis: **A Smart Agriculture DAPPlication Aiming at Information Transparency and Security with Fuzzy Logic and Blockchain Axis, Bitlis Eren University (Continues)**.
6. Sercan Sarp, Master Thesis: **An Exam Evaluation DAPPlication Enhanced with Image Processing, Blockchain Based and Optical Mark, Bitlis Eren University (2024, August**).
7. Sedat Bayraktar Kurt, Master Thesis: A Logical Neural Network Approach to Financial Data Knowledge Base Models, Gebze Technical University and Koç Finance. 2023 (Continues).
8. Yıldıray Yigit, Ph.D Thesis: Developing a Method to Provide Traffic Flow Control to Reduce Fuel Consumption and Emissions in Smart Cities, Elazig Fırat University, Engineering Faculty, Computer Engineering (Continues).
9. Bora Bugra Sezer, Ph.D Thesis: **A New Dimension in Supply Chain Management System Using Blockchain Technology for Traceability and Transparency**, Ege University, faculty of science, department of mathematics, Computer Department of Sciences, 2022.
10. Çağla Özatar, Master Thesis: **Vectorization in Blockchain Smart Contracts**, Gebze Technical University, Department of Mathematics, 2024 (Continues).
11. Nevzat Özcandan, PhD. Thesis: **Zero Knowledge Proof and Multi Party Computation in Transferring between On-chain and Off-Chain Data**, 2024, Gebze Technical University, Department of Mathematics and Tubitak (Continues).

Volunteered Activities

- Theater director (Third place among national universities)
- GTU blockchain club academic advisor (Robotics + Blockchain Dapps)
- 3-ball 3-cushion Billiard player (Second place in the city)
- Istanbul Teknopark project supervisor
- Smart Contract and Blockchain Mentorship at Aselsan Academy
- Mentorship at TUBITAK Blockchain Lab
- Project refereeing at GTU Teknopark
- Undergraduate Students's Science Projects on AI and Blockchain

Affiliated Positions

Associate Prof. Dr. March 2023 to Present
Department of Mathematics,
Gebze Technical University

Associate Prof. Dr. October 2019 to Feb. 2023
Department of Mathematics,
Bitlis Eren University

Assistant Prof. Dr. October 2015 to October 2019
Department of Mathematics,
Bitlis Eren University

Research Assistant February 2011 to April 2015
Department of Mathematics,
Ege University
Supervisor: Tahsin Öner, Ph.D

Visiting Researcher

1. Prof. Dr. Yaroslav D. Sergeyev, DIMES, University of Calabria, as visiting researcher, Rende Cosenza, Italy. (2012 February)

2. In the Department of Mathematics (Prof.Dr. Lawrence S. MOSS) and in the Department of Informatics and Computing (Dr.Muhammad Abdul-Mageed), Indiana University, as visiting researcher, Bloomington, USA. (2013 to 2014)

Citations

i. All Time Total Cited Number : 246

ii. H-index: 9

iii. i10-index : 9

Selected High Quartile Publications

1. **2023** Bodur, S.; **Topal, S.**; Gürkan, H.; Edalatpanah, S.A. A Novel Neutrosophic Likert Scale Analysis of Perceptions of Organizational Distributive Justice via a Score Function: A Complete Statistical Study and Symmetry Evidence Using Real-Life Survey Data. **Symmetry** 2024, 16, 598. https://doi.org/10.3390/sym16050598

2. **2023** Duran V., **Topal, Selçuk**., Taş F., Ulaş A.K., Florentin S. Modeling epidemics based on quantum decision-making model by the qutrit states and employing neutrosophic form of percolation analysis. Cognitive Data Science in Sustainable Computing: Cognitive Intelligence with Neutrosophic Statistics in Bioinformatics, **Elsevier**, ISBN:978-0-323- 99456-9.

3. **2023** Duran V., **Topal, Selçuk**., Florentin S. Aslam M. Using the four-valued Rasch model in the preparation of neutrosophic form of risk maps for the spread of COVID-19 in Turkey. Cognitive Data Science in Sustainable Computing: Cognitive Intelligence with Neutrosophic Statistics in Bioinformatics, **Elsevier**, ISBN:978-0-323-99456-9.

4. **2022** Sezer, B. B., **Topal, Selçuk**, and Nuriyev, U. **TPPSUPPLY: A traceable and privacy-preserving blockchain system architecture for the supply chain. Journal of Information Security and Applications, Elsevier** 66, 103116.

5. **2021** Parimala, M., Broumi, S., Prakash, K., and **Topal, Selçuk**. Bellman–ford algorithm for solving shortest path problem of a network under picture fuzzy environment. **Complex and Intelligent Systems, Springer** 7(5), 2373-2381.

6. **2021** Çevik, A., and **Topal, Selçuk**. Most-intersection of countable sets. Journal of Applied Non-Classical Logics, **Taylor and Francis**, 31(3-4), 343-354.

7. **2021** Duran, V., **Topal, Selçuk**, Smarandache, F., Broumi, S. Using Sieve of Eratosthenes for the Factor Analysis of Neutrosophic Form of the Five Facet Mindfulness Questionnaire as an Alternative Confirmatory Factor Analysis. **CMES-Computer Modeling in Engineering and Sciences**, 129(2), 953–971.

8. **2020** Lawrence S. Moss and **Topal, Selçuk**. Syllogistic Logic with Cardinality Comparsions, on Infinite Sets, Review of Symbolic Logic, **Cambridge University Press**.

9. **2020 Topal, Selçuk**, Çevik, A., and Smarandache, F. A new group decision making method with distributed indeterminacy form under neutrosophic environment: an introduction to neutrosophic social choice theory. IEEE Access, 8, 42000-42009, **IEEE**.

10. **2020 Selçuk Topal** and Cevik, A., "Natural Density and The Quantifier "Most", **Journal of Logic, Language and Information, Springer**.

11. **2019** Al Shumrani, M. A., **Selçuk Topal**, Smarandache, F., and Ozel, C. Covering-Based Rough Fuzzy, Intuitionistic Fuzzy and Neutrosophic Nano Topology and Applications. IEEE Access, 7, 172839-172846, **IEEE**.

12. **2018** Cevik, A.; **Topal, S.**, Smarandache, F. Neutrosophic logic based quantum computing. **Symmetry, MDPI** , 10(11), 656.

13. **2018** Cevik, A.; **Topal, S.**, Smarandache, F. Neutrosophic Computability and Enumeration. **Symmetry, MDPI,** 2018, 10, 643.

14. **2018** Tas, F.; **Topal, S.**, Smarandache, F. Clustering Neutrosophic Data Sets and Neutrosophic Valued Metric Spaces. **Symmetry, MDPI,** 2018, 10, 430.

15. **2018** Topal, Selçuk. Equivalential Structures for Binary and Ternary Syllogistics. **Journal of Logic, Language and Information, Springer**, Volume 27 Number 1, Doi: 10.1007/s10849-017-9260-4.

Other Publications

1. **2023** Akürek, Y. E., **Topal, Selçuk**, and Duran, V. A Nano Topology Based Assessment with Parameter Reduction in Mathematics Education . Disiplinlerarası Eğitim Araştırmaları Dergisi , 7 (14) , 44-58 . DOI: 10.57135/jier.1147629

2. **2023** Gökbaş, H., **Topal, Selçuk**, and Smarandache, F. Neutrosophic Number Sequences: An introductory Study. International Journal of Neutrosophic Science (IJNS), 20(1).

3. **2021** Duran, V., **Topal, Selçuk**., and Smarandache, F. An application of neutrosophic logic in the confirmatory data analysis of the satisfaction with life scale. Journal of Fuzzy Extension and Applications, 2(3), 262-282.

4. **2021 Topal, Selçuk** and Duran, V. Examination of the Text and Sentiment Analysis of the Opinions of the Students in the Social Service Departments regarding the Concept of Education. MSGSÜ Sosyal Bilimler, 1(23), 160-175.

5. **2020** Alharbi, N., Aydi, H., Özel, C., and **Topal, Selçuk**. Rough topologies on classical and based covering rough sets with applications in making decisions on chronic thromboembolic pulmonary hypertension. International Journal of Intelligent Engineering Informatics, 8(3), 173-185.

6. **2020 Topal, Selçuk**, F. Tas, S. Broumi and O. A. Kirecci. Applications of neutrosophic logic of smart agriculture via Internet of Things, Int. J. Neutrosophic Sci., vol. 12, no. 2, pp. 105-115.

7. **2020 Topal, Selçuk**. **A Novel Hybrid Sharing Economy Based Blockchain Model (Proof of Meet)**. Journal of New Theory, (32), 11-14.

8. **2020 Topal, Selçuk**, Sönmez M. G. Ideals and Filters in Neutrosophic Lattices, fcmathsci, Volume 1, Issue 1, 30.

9. **2020** Çağında, S., and **Topal, Selçuk**. **An Application of the Proof of Meet Consensus Protocol on Food Transportation**, Journal of Academic Projection, 5(2), 172-182.

10. **2020** Broumi, S., **Topal, Selçuk**, Bakali, A., Talea, M., and Smarandache, F. A Novel Python Toolbox for Single and Interval-Valued Neutrosophic Matrices. In Neutrosophic Sets in Decision Analysis and Operations Research (pp. 281-330). IGI Global. DOI: 10.4018/978-1-7998-2555-5.ch013, EISBN13: 9781799825579.

11. **2019 Selçuk Topal**, Said Broumi, Assia Bakali, Mohamed Talea, F. Smarandache. A Python Tool for Implementations on Bipolar Neutrosophic Matrices, Neutrosophic Sets and Systems, vol. 28, 2019, pp. 138-161. DOI: 10.5281/zenodo.3382529

12. **2019** H. Ibrahim Ozdemir, Celal Cinar, Halil Bozkaya, **Selçuk Topal**, Ismail Oran, Digital subtraction angiography and multislice computed tomography angiography for cervicocranial vessels: Comparison of radiation doses, Ege Journal of Medicine.

13. **2018** Topal, Selçuk. On Logics of Transitive Verbs With and Without Intersective Adjectives. Studia Humana, Volume 7: Issue 1, Pages 31–43, De Gruyter.

14. **2018 Topal, Selçuk** and Akunsoy, Yasin. *Inference situations, Counter-Model Constructions and A Computer Implementation of A Logic Composed of Intersecting Adjectives and The Quantifier "More'*, Konuralp Journal of Mathematics (KJM), Volume 6, Issue 1, Pages 1-6.

15. **2018 Topal, Selçuk** and Tas, Ferhat. Bézier Surface Modeling for Neutrosophic Data Problems. Neutrosophic Sets and Systems, Vol 20.

16. **2018 Topal, Selcuk** and Smarandache, Florentin (2018). *A Lattice Theoretic Look: A Negated Approach to Adjectival (Intersective, Neutrosophic and Private) Phrases and More"*, New Trends in Neutrosophic Theories and Applications, Vol. II.

17. **2017** Öner, Tahsin and **Topal, Selçuk** . On Completeness and Inference Algorithms of the Logic CARD with IA. Journal of Pure and Applied Mathematics: Advances and Applications, 18(2), 75-86., Doi: 10.18642/jpamaa-7100121874

18. **2017** Topal, Selçuk. *On Properties of Algebraic and Labeled Graph Theoretical of Derivations of Some Logics of Syllogistic and Cardinality Comparisons*. Süleyman Demirel University Journal of Natural and Applied Sciences, Volume 21, Issue 3, 942-947, 2017,

    DOI: 10.19113/sdufbed.50072

19. **2017 Topal, Selcuk** et al. Introduction to Algorithms, 3rd edition, Turkish Translation. Palme Publication. ISBN No: 9786053556497. 1292 pages.

20. **2017** Tas, Ferhat and **Topal, Selçuk**. *Bezier Curve Modeling for Neutrosophic Data Problem*. Neutrosophic Sets and Systems, Vol 16.

21. **2016** Topal, Selçuk. *A Syllogistic Fragment of English with Ditransitive Verbs in Formal Semantics*. Journal of Logic, Mathematics and Linguistics in Applied Sciences.

22. **2016** Topal, Selçuk. Finding minimal Ferrers-esque graphs on path graphs ans cycle graphs via set cover. Communication in Mathematical Modeling and Applications. 4, No. 2, 42-49.

23. **2015** Topal, Selçuk. *An Object-Oriented Approach to Counter-Model Constructions in A Fragment of Natural Language*. Bitlis Eren Üniversitesi Fen Bilimleri Dergisi 4.2.

24. **2015** Topal, Selçuk. *A New Graph Class Defined by Ferrers Relation*. New Trends in Mathematical Sciences 3.3: 181-183.

25. **2015** Topal, Selçuk. *On Graphs of Dualities of Bipartite Posets*. Bitlis Eren University Journal of Science and Technology 5.1.

Conferences and Workshops

1. **2022** Beyond Cantor: The Quantifier Most, International Symposium on Current Topics of Logical Structures in Mathematics. (Invited Speaker).
2. **2018** F. Tas, O. Gursoy and S. Topal, Spherical Bezier Curves and Ruled Surfaces, 16th International Geometry Symposium.
3. **2018** F. Tas and S. Topal, Approximating the Definite Integral Computation: A Novel Method, 16th International Geometry Symposium.
4. **2015** Type Theoretical Approach to Some Fragments of English, ICRAPAM 2015.
5. **2015** A Computational Approach to Syllogistic English Sentences with Ditransitive Verbs in Formal Semantics, ICPAM 2015.
6. **2015** Algorithms in Minimal Ferrer Graph Constructions, ICPAM 2015, Turkey.
7. **2014** Contrastings on Textual Entailmentness and Algorithms of Syllogistic Logics, ICRAPAM 2014.
8. **2013** Natural Logic in Computer Science (NLCS) all meetings. Collocated with LiCS, New Orleans, USA

References

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