

# Mustafa Murat Arat

STATISTICIAN · DATA SCIENTIST · MACHINE LEARNING (DEEP LEARNING) SPECIALIST

Ankara, Turkey

✉ arat.murat@gmail.com | 🌐 mmuratarat.github.io | 📧 mmuratarat | 📄 mustafa-murat-arat | 🌐 mmuratarat | 📧 murat.arat

## SUMMARY

PhD-level educated, bilingual statistician and data scientist, who design, develop and implement advanced predictive methods, powered by machine learning and deep learning algorithms, in order to provide actionable insights from large volumes of real-world, structured and unstructured data in order to satisfy the business needs for decision making. My research interests include but are not limited to the following areas: machine learning and deep learning algorithms, supervised learning, and unsupervised learning methods, time series forecasting and modeling, big data, distribution theory, statistical analysis, optimization and operational research.

I believe that I have a team-oriented, can-do attitude, strong enthusiasm and a deep curiosity about the intersection of business and technology. I am passionate, highly motivated, innovative, energetic, reliable, inclusive and pro-diversity, and have excellent written and verbal communication skills.

## EDUCATION

### Doctor of Philosophy in Analytics

Knoxville, TN, U.S.A.

DEPARTMENT OF BUSINESS ANALYTICS & STATISTICS, HASLAM COLLEGE OF BUSINESS, UNIVERSITY OF TENNESSEE

August 2015 – May 2020

- GPA: 3.92 / 4.00
- Coursework includes: Prescriptive Analytics, Statistical Inference, Probability/Stochastic Process, Bayesian Modeling and Computations, Data Mining Methods and Business Applications, Applied Multivariate Methods, Image Reconstruction, Reinforcement Learning, Applied Time Series, Probability and Mathematical Statistics, Multivariate Data Mining Techniques.
- Completed my dissertation "Advances and Applications in Deep Learning" under the supervision of Dr. Michel Ballings (mb@utk.edu).
- Working on real-world structured/unstructured data through an *American direct-to-consumer retailer*.

### Master of Science in Statistics

Ankara, Turkey

DEPARTMENT OF STATISTICS, INSTITUTE OF NATURAL SCIENCES, HACETTEPE UNIVERSITY

August 2011 – June 2014

- GPA: 3.93 / 4.00 (ranked 1st of 15)
- Coursework includes: Linear Models, Time Series, Stochastic Processes, The Analysis of Contingency Tables, Simulation Techniques, Multivariate Statistical Methods, Survival Analysis.
- Completed my master thesis titled "A Study on Support Vector Machines" under supervision of Prof. Dr. Turhan MENTES (mentes@hacettepe.edu.tr).

### Bachelor of Science in Statistics

Ankara, Turkey

DEPARTMENT OF STATISTICS, FACULTY OF SCIENCE, HACETTEPE UNIVERSITY

September 2007 – June 2011

- GPA: 3.24 / 4.00 (top 10%, ranked 9th of 91)
- Coursework includes: Categorical Data Analysis, Biostatistics, Econometrics, Time Series, Experimental Design, Multivariate Statistical Methods, Stochastic Processes, Sampling, Survey Design, Operation Research, Actuary, Regression Analysis, Probability, Mathematical Statistics, Nonparametric Statistical Methods, Statistical Decision Making, Linear Algebra, Calculus, (Advanced) Mathematics.

## SKILLS

<b>Programming Languages/Libraries</b>	Python, Numpy, Pandas, scikit-learn, et cetera.
<b>Deep Learning Libraries</b>	Tensorflow, and Keras.
<b>Container and Orchestration Systems</b>	Docker, Swarm, Kubernetes.
<b>Database Systems</b>	PostgreSQL
<b>Cloud Computing</b>	Amazon Web Services
<b>No-SQL/Full-text Search Systems</b>	Elasticsearch/Kibana
<b>Big Data Frameworks</b>	Hadoop's MapReduce and Apache Spark
<b>Scripting Languages</b>	R, and MATLAB.
<b>Visualization Software</b>	Tableau.
<b>Statistical Softwares</b>	SPSS, and Minitab
<b>Version Control</b>	Git/Github
<b>Markup Languages</b>	LaTeX, Beamer, Jekyll, and Markdown/R-Markdown.
<b>Miscellaneous</b>	Extensive usage of Jupyter Lab and comfortable with Linux/Unix command line.
<b>Languages</b>	Turkish (Native Language), English (Full professional proficiency), French(Elementary proficiency)

## PROFESSIONAL EXPERIENCES

### Research Assistant

DEPARTMENT OF STATISTICS, FACULTY OF SCIENCE, HACETTEPE UNIVERSITY

Ankara, Turkey

October 2011 – present

- Teaching a wide range of undergraduate-level courses from Bayesian Statistics to Probability Theory.
- Consultant for undergraduate students.
- ERASMUS program coordinator.
- Managing seminars in the department.

### Graduate Teaching Assistant

DEPARTMENT OF BUSINESS ANALYTICS & STATISTICS, HASLAM COLLEGE OF BUSINESS, UNIVERSITY OF TENNESSEE

Knoxville, TN, U.S.A.

August 2015 – July 2020

- Assisting students during the lab sessions and marking written reports of the assignments for courses such as Categorical Data Analysis, Customer Analytics, Applied Multivariate Methods, Applied Time series and many more.
- Co-creating a Deep Learning class for the first time in the faculty with my advisor Dr. Michel Ballings, covering a wide range of topics.

## HONORS & AWARDS

2009–2010 **Supreme Success Award**, Faculty of Science, Hacettepe University

Ankara-Turkey

2015–2020 **Scholarship/Assistantship**, Department of Business Analytics & Statistics, Haslam College of Business, University of Tennessee

Knoxville, TN, U.S.A.

Fall 2015 **Statistics Excellence Fund**, Department of Business Analytics & Statistics, Haslam College of Business, University of Tennessee

Knoxville, TN, U.S.A.

## EDITOR AND TRANSLATOR

1. Editor of the Turkish translation of the book *"Automate the Boring Stuff with Python"* by Al Sweigart, Buzdağı Kitapevi, soon-to-be-published.

2. Editor of the Turkish translation of the book *"Python Crash Course: A Hands-On, Project-Based Introduction to Programming"* by Eric Matthes, Buzdağı Kitapevi, <https://www.buzdagikitapevi.com/kapsamli-python-kursu-programlamaya-uygulamali-ve-proje-tabanli-giris>.

3. Editor of the Turkish translation of the book *"Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems"* by Aurelien Geron, 2021, Buzdağı Kitapevi, <http://buzdagiyaivevi.com/scikit-learn-keras-ve-tensorflow-ile-uygulamali-makine-ogrenmesi/>

4. One of the translators of the Turkish translation of the book *"Schaum's Outline of Probability (2nd edition)"* by Marc Lipson and Seymour Lipschutz, 2013, Nobel Yayın Dağıtım, <https://www.nobelyayin.com/detay.asp?u=3893>.

5. One of the translators of the Turkish translation of the book *"Introduction to Probability"* by George G Roussas, 2014, Nobel Yayın Dağıtım, <https://www.nobelyayin.com/detay.asp?u=4207>.

## PROJECTS AND TRAININGS

### Intervention 10: Research on Occupational Accident Prediction Model

Ankara, Turkey

SENIOR NON-KEY EXPERT

July, 2022 - October, 2022

- Part of the Project No: TREESP1.3.CASGEM/P-01, EuropeAid/140073/IH/SER/TR
- by Directorate of European Union and Finance Assistance (DEUFA) in the Ministry of Labour and Social Security of the Republic of Turkey
- Responsibilities are:
  1. A proposal for data selection, and for the classification and selection of statistical variables
  2. Designed and programmed prediction models for occupational accident prediction.
  3. Instructions on how to use the selected models/algorithms in the four sectors of the project, i.e., construction (building), mining (coalmine), chemical (petrochemical) and metal (moulding) since they account for more than 44.7% of all occupational accidents.
  4. Writing the final report.
- <https://www.casgemeuproject.org/>

## Technical Assistance for Strengthening Training and Research Capacity of the Centre for Labour and Social Training and Research (ÇASGEM)

Ankara, Turkey

SENIOR NON-KEY EXPERT

March, 2022 - June, 2022

- Project No: TREESP1.3.CASGEM/P-01, EuropeAid/140073/IH/SER/TR
- by Directorate of European Union and Finance Assistance (DEUFA) in the Ministry of Labour and Social Security of the Republic of Turkey
- for 1st, 2nd and 3rd Sessions of the Intervention 5.5 Training on Advanced Statistical Analysis Method for Health Physical and Social Sciences in OHS, Total 75 participants
- <https://www.casgemeuproject.org/>

### Machine Learning

Ankara, Turkey

TRAINER

March 7 - April 1, 2022

- by Presidency of Turkey, Presidency of Strategy and Budget
- Hybrid Model (Online Class + Face-to-Face), Around 35 participants
- <https://www.sbb.gov.tr>

### Data Analysis with Python

Ankara, Turkey

TRAINER

January 24, 2022 - February 7, 2022

- by Presidency of Turkey, Presidency of Strategy and Budget
- Hybrid Model (Online Class + Face-to-Face), Around 55 participants
- <https://www.sbb.gov.tr>

## Technical Assistance for Strengthening Training and Research Capacity of the Centre for Labour and Social Training and Research (ÇASGEM)

Ankara, Turkey

SENIOR NON-KEY EXPERT

2021

- Project No: TREESP1.3.CASGEM/P-01, EuropeAid/140073/IH/SER/TR
- by Directorate of European Union and Finance Assistance (DEUFA) in the Ministry of Labour and Social Security of the Republic of Turkey
- for 2nd and 3rd Sessions of the Intervention 5.4 Training on Basic Statistical Analysis Method for Health Physical and Social Sciences in OHS - Total 50 participants
- <https://www.casgemeuproject.org/>

### Turkish Nourishment and Health Project

Ankara, Turkey

RESEARCHER

August, 2013 - September, 2013

- Project No: 013A601001
- by Republic of Turkey - Ministry of Health
- <http://www.saglik.gov.tr/>

## PEER-REVIEWED PUBLICATIONS

1. Tan, O., Hizli Sayar, G.H., Ünsalver, B.Ö., **Arat, M. M.** & Karamustafalioglu, O. (2014). "The correlations of nicotine addiction with the levels of impulsiveness, depression and anxiety in obsessive-compulsive patients". *Journal of Dependence*, 15(3), 124 – 133.
2. Gogcegoz Gül, I., Eryilmaz, G., Hizli Sayar, G., Özten, E., **Arat, M.M.**, & Tarhan, N. (2014). "Evaluation of the Efficacy of The Continuation Electroconvulsive Therapy in Treatment-Resistant Schizophrenia". *Revista de Psiquiatria Clínica*, 41(4), 90 – 94
3. Eryilmaz, G. Gogcegoz Gül, I., Yorbik, O., & **Arat, M.M.** (2014). "Evaluation of Clinical Response According to Plasma Paroxetine Level in Paroxetine-Responsive Major Depression". *International Journal of Internal Medicine*, 3(3), 39 – 42.
4. Tan, O., Hizli Sayar, G., Ünsalver, B.Ö., **Arat, M. M.** & Karamustafalioglu, O. (2015). "Combining transcranial magnetic stimulation and cognitive-behavioral therapy in treatment resistant obsessive-compulsive disorder". *Anatolian Journal of Psychiatry*, 16(3), 180 – 188.
5. **Arat, M.M.**, Aktas, S. (2016). "Generalized Maximum Entropy Approach to Unreplicated Factorial Experiments". *Statistics and Its Interface*, 9(3), 295 – 302.
7. Bharadwaj, N., Ballings, M., Naik, P., Moore, G.M., **Arat, M.M.** (2022). "A New Livestream Retail Analytics Framework to Assess the Sales Impact of Emotional Displays". *Journal of Marketing*, 86(1), 27 – 47.
6. **Arat, M.M.** (2022). "Learning From High-Cardinality Categorical Features in Deep Neural Networks", *Journal of Advanced Research in Natural and Applied Sciences*, 8 (2), 222 – 236.

## ORAL PRESENTATIONS

### Applied Statistics 2012

Ribno (Bled), Slovenia

**MUSTAFA MURAT ARAT**, "TESTING EXPORT-LED GROWTH HYPOTHESIS: THE CASE OF TURKEY, 1961-2010"

September 23 – 26, 2012

## EURO-INFORMS Joint International Meeting: 26th European Conference on Operational Research

Rome, Italy

ELCIN ERGIN, **MUSTAFA MURAT ARAT**, CEM IYIGUN, INCI BATMAZ, "SHORT-TERM ELECTRICITY LOAD FORECASTING VIA NONPARAMETRIC PREDICTION METHODS"

July 1 – 4, 2013

## European Conference on Data Analysis by The German Classification Society (GfKl) and the French speaking Classification Society (SFC)

Luxembourg, Luxembourg

**MUSTAFA MURAT ARAT**, ELCIN ERGIN, "SHORT TERM LOAD FORECASTING USING  $\epsilon$ -SUPPORT VECTOR REGRESSION"

July 1 – 4, 2013

## The 13th Annual Conference of the European Network for Business and Industrial Statistics (ENBIS-13)

Ankara, Turkey

**MUSTAFA MURAT ARAT**, SERPIL AKTAS ALTUNAY, "GENERALIZED MAXIMUM ENTROPY APPROACH TO UNREPLICATED FACTORIAL EXPERIMENTS"

September 15 – 19, 2013

## y-BIS 2013: Joint Meeting of Young Business and Industrial Statisticians, sponsored by International Society for Business and Industrial Statistics (ISBIS) and European Network for Business and Industrial Statistics (ENBIS)

Istanbul, Turkey

**MUSTAFA MURAT ARAT**, "COMPARISON OF SVM AND LS-SVM FOR REGRESSION"

September 19 – 21, 2013

## Theory + Practice in Marketing Conference

New York, NY, USA

MICHEL BALLINGS, NEERAJ BHARADWAJ, PRASAD NAIK, GEORGE MILLER MOORE, **MUSTAFA MURAT ARAT**, "BUT WAIT, THERE'S MORE! DEEP LEARNING OF SALES ELASTICITY OF SALES PITCHES. THEORY + PRACTICE IN MARKETING"

May 18, 2019

## Interactive Marketing Research Conference

Houston, TX, USA

**MUSTAFA MURAT ARAT**, GEORGE MILLER MOORE, MICHEL BALLINGS, "MAXIMIZING INSIGHTS FROM CUSTOMER DATA STREAMS"

March 27 – 29, 2019

## INFORMS Annual Meeting 2019

Seattle, WA, USA

**MUSTAFA MURAT ARAT**, MICHEL BALLINGS, GEORGE MILLER MOORE, "BREAKING THROUGH BARRIERS TO DEEP LEARNING ADOPTION IN CUSTOMER BEHAVIOR MODELING"

October 20 – 23, 2019

## 2020 Winter AMA Academic Conference

San Diego, CA, USA

NEERAJ BHARADWAJ, MICHEL BALLINGS, PRASAD NAIK, MILLER MOORE AND **MUSTAFA MURAT ARAT**, "PURCHASE IMPACT OF A SALESPERSON'S FACIAL EXPRESSIONS: LARGE-SCALE VIDEO ANALYSIS USING DEEP LEARNING"

February 14 – 16, 2020

## 22nd Local and 5th International Biostatistics Conference

Online

OSMAN TOLGA KASKATI, **MUSTAFA MURAT ARAT**, FATMA KAYMAKAMTORUNLARI DENİZ, EMRE KESKİN, "POPÜLASYON GENETİĞİ ÇALIŞMALARINDA MANTEL TESTİ ÜZERİNDE BİR UYGULAMA"

October 28 – 30, 2021

\*\*\*Underline means who presents the paper.\*\*\*

## POSTER PRESENTATIONS

### 6th International Congress on Psychopharmacology

Antalya, Turkey

GÖGCEGÖZ GÜL, I., ERYILMAZ, G., HIZLI SAYAR, G., ÖZTEN, E., TARHAN, N., **ARAT, M.M.**, "EVALUATION OF THE EFFICACY OF THE CONTINUATION ELECTROCONVULSIVE THERAPY IN TREATMENT-RESISTANT SCHIZOPHRENIA"

September 19 – 21, 2013

## INVITED TALKS/SEMINARS

### Department of Statistics, of Hacettepe University

Ankara, Turkey

**MUSTAFA MURAT ARAT**, "BRINGING BUSINESS, STATISTICAL METHODS AND TRANSFER LEARNING TOGETHER: SALES ELASTICITY OF EMOTIONAL DISPLAYS - LARGE SCALE EVIDENCE FOR SELLING WITH A STRAIGHT FACE"

December 29th, 2020

## Department of Statistics, of Middle East Technical University

Ankara, Turkey

MUSTAFA MURAT ARAT, "A NEW LIVESTREAM RETAIL ANALYTICS FRAMEWORK TO ASSESS THE SALES IMPACT OF EMOTIONAL DISPLAY"

May 27th, 2021

## Workshop for "Technical Assistance for Improving the Detection Capacity of Turkish Customs Enforcement" European Union Project

Abant, Bolu, Turkey

MUSTAFA MURAT ARAT, "INTRODUCTION TO MACHINE LEARNING AND BASIC MACHINE LEARNING APPLICATIONS"

Nov 12nd, 2021

## Department of Computer Science, Manisa Celal Bayar University

Manisa, Turkey

MUSTAFA MURAT ARAT, "INTERN CAREER TALK"

April 4th, 2022

## COLLOQUIUMS/MEETINGS/CONFERENCES ATTENDEE

1. 8th International Statistics Students Colloquium, Izmir, Turkey, May 14 – 15, 2011.

2. The Joint Meeting of Young Business and Industrial Statisticians and Young Portuguese Statisticians, Lisbon, Portugal, July 23 – 26, 2012.

3. 9th International Statistics Days Symposium, Antalya, Turkey, May 10 – 14, 2014.

## SCIENTIFIC ACTIVITIES

### GIS 2013: Genç İstatistikçiler Sempozyumu (Young Statisticians Symposium)

Ankara, Turkey

MEMBER OF THE LOCAL ORGANIZING COMMITTEE

September 10 – 11, 2013

• <http://www.gis2013.hacettepe.edu.tr>

### AIK 2013: Araştırmacılar ve İstatistikçiler Konferansı (Researchers and Statisticians Conference)

Ankara, Turkey

MEMBER OF THE LOCAL ORGANIZING COMMITTEE

September 12 – 13, 2013

• <http://www.aik2013.hacettepe.edu.tr>

### y-BIS 2013: Joint Meeting of Young Business and Industrial Statisticians, sponsored by ENBIS (European Network for Business and Industrial Statistics) and ISBIS (International Society for Business and Industrial Statistics)

Istanbul, Turkey

MEMBER OF THE INTERNATIONAL SCIENTIFIC COMMITTEE AND ORGANIZING COMMITTEE

September 19 – 21, 2013

• <http://ybis13.msgsu.edu.tr>

### y-BIS 2019: Joint Meeting of Young Business and Industrial Statisticians, sponsored by ENBIS (European Network for Business and Industrial Statistics) and ISBIS (International Society for Business and Industrial Statistics)

Istanbul, Turkey

MEMBER OF THE INTERNATIONAL SCIENTIFIC PROGRAM COMMITTEE

September 25 – 28, 2019

• <http://ybis2019.msgsu.edu.tr>

## INTERNSHIPS

### Turkish Statistical Institute

Ankara, Turkey

WWW.TURKSTAT.GOV.TR

August 9 – August 27, 2010

## REVIEWS FOR

### Applied Soft Computing

Impact Factor: 4.873

REVIEWER

• Imprint: ELSEVIER - <http://www.journals.elsevier.com/applied-soft-computing/>

• ISSN: 1568-4946

• Abstracting and Indexing: Science Citation Index Expanded, Scopus, CompuMath Citation Index, Current Contents/Engineering, Computing & Technology

REVIEWER

- ISSN: 1308-0539 / 1308-0539
- Abstracting and Indexing: TR Index

## PROFESSIONAL SERVICES

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### Turkish Statistical Association

Ankara, Turkey

ASSOCIATE MEMBER OF "THE BOARD OF DIRECTORS"

2012 – 2014

- <http://www.turkistatistik.org>

## PROFESSIONAL AFFILIATIONS

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**European Network for Business and Industrial Statistics (ENBIS)** member

**Bernoulli Society for Mathematical Statistics and Probability** member

**Institute of Mathematical Statistics (IMS)** member

**International Society of Business and Industrial Statistics (ISBIS)** member

**International Society for Bayesian Analysis and its Industrial Statistics Section (ISBA)** member

**American Statistical Association (ASA)** member

**The Institute for Operations Research and the Management Science (INFORMS)** member