



**TECHNICAL
UNIVERSITY
OF CRETE**

In the spotlight

Awards and Distinctions

January 2020 – December 2020

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*Azenha do Mar Urban Infill, 1st Award
Eurasian Prize in Architecture
Urban Development-Comfortable Urban Environment subcategory*



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The research contributions of the Technical University of Crete (TUC) are broadly appreciated and TUC is recognized as one of the most prestigious research institutions in Greece with hundreds of research programs in progress. According to the most recent formal governmental evaluation procedure for Higher Education, in March 2016, the External Evaluation Committee of the Hellenic Quality Assurance & Accreditation Agency (HQA) [today's Hellenic Authority for Higher Education (www.ethaae.gr)] evaluated the Technical University of Crete at the highest possible rank: "Worthy of Merit". "Research is a core mission of the Institution and as a result, TUC delivers scientific output of high calibre and volume. In terms of research publications, TUC is one of the most productive research institutions in Greece and compares very favorably with peer institutions in Europe and North America." With these words, the External Evaluation Report confirmed the high-level research produced by the Technical University of Crete.

In this direction, the pursuit of excellence is the driving force. This booklet describes selected international distinctions of our institution during the year of 2020, beginning with the most recent ones.

Galileo Masters 2020 | Sports4VIP Team is the winner in the "Space for Fun" category



G. Deligiorgis

G. Kassiotis

K. Kokolakis, TUC PhD candidate and Sports4VIP team leader

In the context of the *Galileo Masters 2020 Competition*, the European GNSS Agency (GSA) committee consisting of 10 experts unanimously declared the **Sports4VIP team** as the **Winner** in the *Space for fun* category. The announcement of the results was made during *Space Week 2020*, which took place online from 7 to 11 December 2020. The team had already won the first place during the Greek invitation. In addition, the Sports4VIP team was in the list of the 12 best proposals, among 500 proposals, in all categories of the competition. The team leader is **Konstantinos Kokolakis**, TUC PhD candidate at the **Laboratory of Geodesy and Geomatics Engineering** of the TUC School of Mineral Resources Engineering. Members of the team are **Georgios Deligiorgis** and **Georgios Kassiotis**, both graduates of the Physics Department, University of Crete.

About the project:

So far, visually impaired people (VIP) are informed about sports mainly through audio descriptions. Taking advantage of just one of the senses is an incomplete, delayed approach that is also vulnerable to subjectivity, since the stimulations received are filtered through a commentator. This way VIP do not

equally participate, in the emotion, socialization, and recreation of sports. Sports4VIP tackles this by introducing the sense of touch to the experience of sports for VIP. It is a Galileo-enabled wearable with an AI-based tracking system. Athletes and/or objects (footballs, basketballs, etc.) are continuously followed by this system and the spatial data are transferred to Sports4VIP IoT devices called VIPins. A VIPin is a miniature version of the contextual field with moving parts that allow VIP to follow the movement of athletes/objects, thereby making them equal recipients of the sensory sports experience.

About the contest:

The innovation competition is scouting for the most forward-thinking applications based on satellite navigation technologies. It provides support for innovations at any development stage, with the ultimate aim of turning them into real business cases. Let us highlight that **TUC SenseLab Research Group** was Greece's Regional Organizer for both major European Space Competitions, Galileo Masters and Copernicus Masters 2020.

Second Prize for TUC in the 2020 IEEE ComSoc Student Competition



Team Members:

G. Vougioukas, M. Andrianakis, N. Dadidakis

TUC students are **Winners (2nd Prize, ex aequo)** in the **2020 IEEE ComSoc “Communications Technology Changing the Word”** Student Competition. Dedicated to the future leaders in communications and networking, IEEE ComSoc holds the annual student competition, encouraging communications engineering students to expand their knowledge, test and showcase new skills, and inspire innovation. The competition, “Communications Technology Changing the Word”, recognizes students or teams of students who demonstrate the capacity to improve the lives of people, through the application of communication technology and the development of projects that meet the human needs of people.

TUC Team Members are **George Vougioukas**, team leader and PhD candidate at the School of Electrical and Computer Engineering (ECE), **Manolis Andrianakis**, postgraduate ECE student and **Nikolaos Dadidakis**, undergraduate ECE student, with ECE Professor **Aggelos Bletsas**, as the project advisor. The project is entitled **“Recycling Radio Waves for the Wide Adoption of Precision Agriculture”**. The entries in the competition were 54 in total from various Universities around the world and were evaluated and ranked by an international judging committee, appointed by the Student Competition Chairs, including representatives of all ComSoc Technical Committees. Evaluation criteria included, originality, creativity in applying communication technology, social impact on humanity or local community, challenging technical aspects, practical results and possible application in other parts of the world. TUC team won the second prize, ex aequo with Beihang University' team (China).

High performance of TUC teams in the IEEEExtreme14



They took our Name team members:

Giorgos Margaritis, Diamantis Rafail Papadam,
Thanasis Rentzepopoulos

The LastDance team members:

Ilias Balampanis, Stefanos Kontos, Giorgos Zemperlighos

Two TUC Teams with the participation of six Electrical and Computer Engineering (ECE) undergraduate students achieved high performance during this year's IEEEExtreme14 challenge. Advised by ECE Professor **Aggelos Bletsas** and supported by the **IEEE TUC Student Branch**, our teams secured the following spots at the end of the 24-hour contest, among 2,157 entries:

They took our Name: Global Rank: 114 | Country Rank: 6

The LastDance: Global Rank: 217 | Country Rank: 9

IEEEExtreme is an annual global hackathon and competitive programming challenge in which teams of IEEE Student members compete in a 24-hour time span to solve a set of programming problems.

Prof. Elia Psillakis, Head of the upgraded EuChemS-DAC 'Sample Preparation Study Group'



Prof. Elia Psillakis

The European Chemical Society - Division of Analytical Chemistry (EuChemS-DAC) upgraded unanimously the Sample Preparation Task Force to **Sample Preparation Study Group**, with **Elia Psillakis**, Professor at the School of Environmental Engineering, as the Head of the Group. The EuChemS-DAC Sample Preparation Study Group and Network aims to promote sample preparation through the creation of clusters, organization of events, facilitation of communication, information exchange, networking, and the promotion of fundamental studies and cross-disciplinary collaboration. To further benefit the area, efforts are placed on promoting innovation and entrepreneurship, as well as promoting early stage researchers involvement.

Honoring TUC GeoMatLab during Sentinel-6 launch



On November 21, 2020, in honor of the **TUC Laboratory of Geodesy and Geomatics Engineering (GeoMatLab)**, a video was showcased in the context of the US-European *Sentinel-6 Michael Freilich* ocean-monitoring satellite launch, from Vandenberg Air Force Base, California. Part of the video shows the research work of the GeoMatLab Team, headed by TUC Professor **Stylianos Mertikas**, for the ESA's Permanent Facility for Altimetry Calibration in West Crete and Gavdos Island. The Sentinel-6 Michael Freilich spacecraft began a five-and-a-half-year prime mission to collect the most accurate data yet on global sea level and the rise of oceans in response to climate change.

AI developed at the TUC School of ECE prevails in international power trading competition



TUC-TAC Team members are:

Stavros Orfanoudakis (undergraduate student), Stefanos Kontos (undergraduate student), Charilaos Akasiadis (postdoctoral researcher), and Georgios Chalkiadakis (Associate Professor).

The **TUC-TAC intelligent software agent** has been declared the winner of this year's International **PowerTAC trading agents tournament**. PowerTAC is held annually and pits intelligent autonomous software agents corresponding to energy brokers against each other in simulated complex retail electricity markets. The TUC-TAC team, located at the **Intelligence Lab** of the School of Electrical and Computer Engineering (ECE) at the Technical University of Crete, develops intelligent software agents and participates in trading agent competitions since 2012. TUC-TAC employs Artificial Intelligence and Machine Learning techniques in order to subscribe a large number of customers (electricity consumers) to its services, while ensuring that it keeps its cost low.

TUC became a member of the Crowdhelix Network



Associate Professor Denia Kolokotsa

The **Crowdhelix Network** is an open innovation platform that forges links between an international network of excellent researchers and innovative companies, to deliver pioneering collaborative projects under the *EU's Horizon 2020*, and soon *Horizon Europe* program. Technical University of Crete became a member of the **Crowdhelix Network**, as coordinator of the EU funded project - **VARCITIES**, one of the 26 active communities (Helixes) of researchers and companies, the Healthy Cities Helix, with Associate Professor **Denia Kolokotsa** as Helix Leader. This Helix focuses on building a strong, self-sustaining community of like-minded stakeholders that will have access to updates on the project and will collaborate to further innovate the field of nature-based solutions for future cities.

TUC is a member of the Global Pandemic Network



Assistant Professor Vasiliki Geropanta

TUC is officially a member of the **Global Pandemic Network** (GPN). GPN is a community of scholars from universities around the world intending to promote debates, comparisons, research and webinars in relation to the legal, economic and social aspects associated with pandemics, linked, not only to the emergency, but also to the precautionary and recovery phases, through an integrated and interdisciplinary approach. The focus starts with the Covid-19. **Vasiliki Geropanta**, Assistant Professor of Urban Planning with New Technologies (TUC School of Architecture), is the representative of Greece to GPN and among the coordinators of two thematic: (a) **Cities**, with research activities related to Urban Planning and Policy Design for urban healthcare and well-being issues, and (b) **Digital Society**, with research activities related to Smart Cities, Information and Communications Technology, Artificial Intelligence for the pandemic city.

Prof. Nicolas Kalogerakis, Plenary Lecturer at ICCE 2020



On-line plenary lecture by Prof. Kalogerakis

On October 28, 2020, Professor **Nicolas Kalogerakis**, Director of the Biochemical Engineering and Environmental Biotechnology Laboratory in the School of Environmental Engineering at TUC, gave an on-line plenary lecture entitled "**Ecosystem and Engineering Process Applications of Air Nanobubbles**", on the occasion of the 5th International Conference on Chemical Engineering (ICCE 2020), 28-30 October 2020, Iași, Romania. The ICCE 2020 was co-organized by Gheorghe Asachi Technical University of Iași, Cristofor Simionescu Faculty of Chemical Engineering and Environmental Protection and Gheorghe Asachi University Foundation, under the auspices of the Romanian Academy. The conference was dedicated to the celebration of the centenary birthday of Prof. Cristofor I. Simionescu, founder of the Romanian School of Polymers Science.

Associate Prof. G. Chalkiadakis is the new EURAMAS Chair

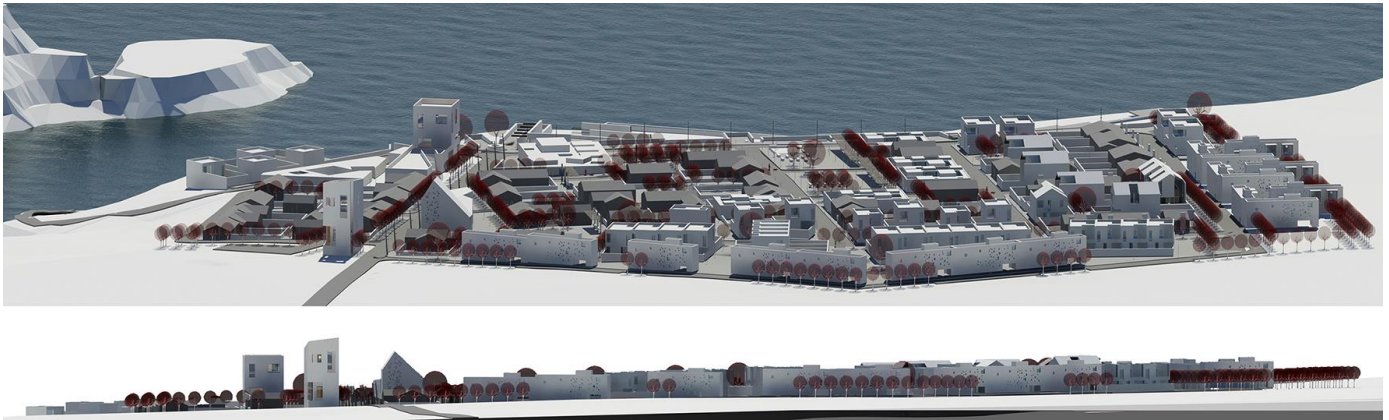


Associate Professor Georgios Chalkiadakis

On October 1st, 2020, Associate Professor **Georgios Chalkiadakis** assumed the duties of the Chair of the European Association for Multi-Agent Systems (EURAMAS). He held the office of the Association's Deputy Chair since March 2018, when he was elected in the Board of Directors. There are twelve members (all experts in the area of multiagent systems) serving in the Board of Directors, elected for a four-year term each. Elections to replace 6/12 Board members take place every two years via electronic vote conducted at a European level among the EURAMAS members. EURAMAS is a non-profit organisation, aiming at promoting European science and technology in the area of multiagent systems. Since its establishment, EURAMAS constitutes a representative forum for European experts within the field of multiagent systems.

Eurasian Prize in Architecture

First Award for Alexios Tzobanakis



Azenha do Mar Urban Infill: 1st Award



Assoc. Prof. Alexios Tzompanakis



Drapetsona Brownfields Regeneration: 2nd Award

The project of Assoc. Prof. **Alexios Tzompanakis** entitled "**Azenha do Mar Urban Infill**" (Portugal) was awarded the first prize in the subcategory **Urban Development-Comfortable Urban Environment** in the context of the International Competition **Eurasian Prize in Architecture** during the 15th Arch Eurasia International Summit 2020, 1-3/10/2020, Yekaterinburg, Russia. This is a very important distinction as the entries in the competition were about 450 from 53 countries.

The distinction is double as at the same contest the project "**Drapetsona Brownfields Regeneration**" (Ma_A-Mediterranean architecture_Atelier-Alexios Tzobanakis, Alessandro Lanzetta) got the 2nd prize under the category **Urban Development-Urban Environment Design**.

In the 15th anniversary season, the competition projects were judged by an international jury consisting of 'stars': Patrick Schumacher, Ben van Berkel, Karim Rashid, Jurgen Mayer, Rainer Mahlamyaki, Chris Yao, Peter Ippolito, Manal Rahdi and other well-known architects and designers of our time.

"2020 IEEE Transportation Technologies Award" for Markos Papageorgiou and 1st Best Conference Paper Award for DSSL



Prof. Markos Papageorgiou



1st Best Conference Paper Award

Professor **Markos Papageorgiou**, Director of the Dynamic Systems and Simulation Laboratory (DSSL), was awarded the **2020 IEEE Transportation Technologies Award**, for contributions to traffic flowing modelling and operations, by the Institute of Electrical and Electronics Engineers (IEEE), during a virtual event, on September 21, 2020. The award was presented by Prof. Toshio Fukuda, IEEE President, on the occasion of the **23rd IEEE International Conference on Intelligent Transportation Systems (ITSC)**, September 20-23, 2020 (virtual conference).

The IEEE Transportation Technologies Award was established in 2011 and is presented to an individual, a team, or multiple recipients up to three in number, recognizing advances in technologies within the fields of interest to the IEEE as applied in transportation systems. The award consists of a bronze medal, a certificate, and a cash honorarium. The award is sponsored by the following IEEE Societies: IEEE Industry Applications Society, IEEE Industrial Electronics Society, IEEE Intelligent Transportation Systems Society, IEEE Microwave Theory and Techniques Society, IEEE Power Electronics Society, IEEE Power & Energy Society, and IEEE Vehicular Technology Society.

There was a second success for DSSL during the 23rd ITSC, in particular about the following article:

Cao, J., Hu, Y., Manolis, D., Zhang, S., Wang, Y., Guo, J., Papamichail, I., Papageorgiou, M., Zhang, L., Hu, J.: A Max Pressure Approach to Urban Network Signal Control with Queue Estimation using Connected Vehicle Data. 23rd IEEE International Conference on Intelligent Transportation Systems (ITSC), September 20-23, 2020 (Virtual), pp. 612-619

This paper received the **1st Best Conference Paper Award** among 570 scientific papers that were presented on-line during the conference. Among the authors are Professor **Markos Papageorgiou**, Associate Professor **Ioannis Papamichail** (School of Production Engineering and Management-PEM) and Dr. **Diamandis Manolis**, a DSSL postdoctoral researcher and TUC PEM graduate. The article is the result of a DSSL collaboration with the Institute of Intelligent Transportation Systems, Zhejiang University and is about the use of connected vehicle data for efficient urban traffic control.

Success Story: Founded by TUC Alumni, InstaShop was acquired for \$360 million a record sum for a Greek startup



TUC Alumna Ioanna Aggelidaki



TUC Alumnus John Tsioris

TUC Alumni, **John Tsioris** and **Ioanna Aggelidaki***, are the names behind **InstaShop**, a company whose grocery ordering app is especially popular in the Middle East. On August 27, 2020 InstaShop announced that it has been acquired by the German group Delivery Hero, for \$360 million, which is the largest price ever commanded by a Greek startup. InstaShop, a homegrown marketplace on demand delivery app, was introduced to Dubai in 2015, by John Tsioris and Ioanna Aggelidaki, as a grocery delivery app. Today InstaShop has onboarded various local retailers such as pharmacies, butcheries, pet shops and others, evolving into a one stop-shop solution.

The ease and convenience of the service is the reason why InstaShop is the leading company in the on demand grocery delivery market in the MENA region, with more than 500,000 active users in H1 2020, currently present in five countries.

InstaShop's business model is marketplace-based: it connects customers with vendors and facilitates the purchase, while the shops take care of the logistics. As a leading grocery delivery marketplace in the Middle East and North Africa, InstaShop offers scheduled as well as on-demand deliveries in 45 minutes on average. Partnering with approximately 1,500 vendors, the company operates in five countries: the United Arab Emirates, Qatar, Bahrain, Egypt and Lebanon.

Instashop was backed over the years by Jabbar Internet Group, one of the leading tech investors in the region, and VentureFriends, a European early stage investor from Greece. The exit marks a record for the Greek tech ecosystem as well as a major exit for the MENA region and is expected to further support the growth of entrepreneurial tech activity in both regions.

* Both, **John Tsioris** and **Ioanna Aggelidaki**, graduated and received the Diploma of Engineering in 2008 from the School of Production Engineering and Management (PEM). Ioanna continued her studies at PEM School and received a Master of Science in 2010.

TUC hosts the EU Careers Student Ambassadors program



Georgios Agoritsis, TUC undergraduate student

The Technical University of Crete hosts the EU Careers Student Ambassadors program during the current academic year 2020-2021. TUC is one of the 151 European Universities that participates in this program, which is conducted for the first time in our University. Following the open call for expressing interest, **Georgios Agoritsis**, an undergraduate student at the School of Electrical and Computer Engineering, was selected as the **EU Careers Student Ambassador for TUC**. The main objective of the program is to establish a contact point between the Technical University of Crete and the European Union and bridge the students with EU careers.

TUC in the 'European Universities' Alliance EURECA-PRO



Technical University of Crete is one of the seven higher education institutions that have joined forces to create a strong and unique European University in the field of Responsible Consumption and Production (RCP): **EURECA-PRO**. The partner Universities are Montanuniversität Leoben, TU Bergakademie Freiberg, Universitatea din Petroșani, Univerdad de León, Politechnika Śląska, Hochschule Mittweida. European Universities are transnational alliances that will become the universities of the future, promoting European values and identity, and revolutionizing the quality and competitiveness of European higher education. The Alliance EURECA-PRO has a two-fold societal and planetary mission. On the one hand, it holistically contributes to the highly topical issue of RCP under Sustainable Development Goal (SDG) 12, and on the other hand, it effectively contributes to the transformation of the European Higher Education Area complementarily to SDG 4. With four technical, two comprehensive universities and one university of applied sciences, located in six different EU member states, this Alliance is a unique mix of top-level cross-disciplinary education and research that enables students and staff to focus on many different fields from different perspectives.

Assist. Prof. Alexandros Stefanakis as Editor-in-Chief for Springer-Nature CIES journal



Assistant Professor Alexandros Stefanakis

Springer-Nature announced a new scientific peer-reviewed journal entitled "**Circular Economy and Sustainability - CIES**". In this journal, Assistant Professor **Alexandros Stefanakis** (TUC School of Environmental Engineering) serves as **Editor-in-Chief**, with Dr. Nikoleta Jones (Cambridge University) and Assoc. Professor Ioannis Nikolaou (Democritus University of Thrace) as Co-Editors-in-Chief. CIES is the first one to cover the current and emerging subject of Circular Economy, aiming at analyzing the status and perspectives for the transition to a circular economy, to achieve the principles of Sustainability.

Invited contribution of Professor Elia Psillakis



Professor Elia Psillakis

Prof. **Elia Psillakis** (TUC School of Environmental Engineering) was invited to contribute to the special edition "**Female Role Models in Analytical Chemistry**" of the International Scientific Journal **Analytical and Bioanalytical Chemistry** of Springer Publishing Company. With the extremely rich and diverse scientific articles of the about 60 chosen female researchers contributing to classical analytical fields and to more nanoscience-oriented approaches, the special issue demonstrates that females are present in all areas of analytical science. Quoting the editors' note, the female scientist included to this special issue, "*inspired us much more closely with their demonstrated ingenuity and creativity, persistence and success, and leadership accompanied with outstanding personalities.*" Prof. Elia Psillakis, contributed to this edition with a monograph in a Trends article entitled "**The effect of vacuum: an emerging experimental parameter to consider during headspace microextraction sampling**".

TUC Professors among the leading C&E scientists



Prof. Constantin Zopounidis



Prof. Minos Garofalakis

TUC Professors, **Constantin Zopounidis** (School of Production Engineering and Management) and **Minos Garofalakis** (School of Electrical and Computer Engineering) are among the leading scientists, according to the 2020, 6th edition of **Top Scientists Ranking for Computer Science & Electronics**, by **Guide2Research** portal. The ranking represents h-index, DBLP and citations values gathered by May 16th 2020. The key analysis is the Top Scientists Ranking, which is a definitive list of leading scientists from the field of computer science and electronics, based on a detailed examination of more than 6000 profiles on Google Scholar and DBLP. Position in the ranking is based on each scientist's influential contributions based on their h-index from Google Scholar, which is the largest and well-accepted bibliometric database of this type available to the scientific community.

- Professor Zopounidis is placed 890th at the world ranking and 4th at the ranking, which features all top computer scientists affiliated with Greece.
- Professor Garofalakis is placed 1152nd at the world ranking and 5th at the ranking, which features all top computer scientists affiliated with Greece.

Professor Markos Papageorgiou broke the 20,000 citation level



Prof. Markos Papageorgiou

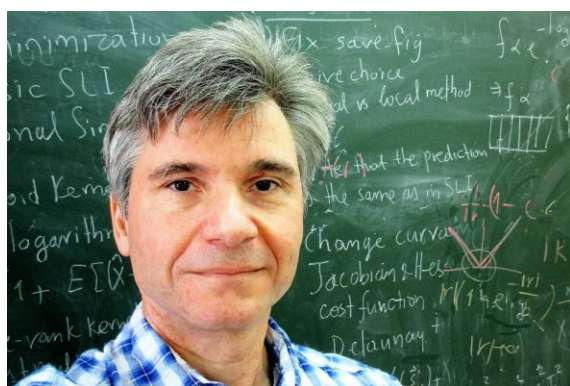
Professor **Markos Papageorgiou** broke the 20,000 citation level [h-index 70] as reported in Google Scholar [May 2020]. Prof. Papageorgiou is the first TUC faculty member with 20,000+ citations to his work. In 2014, he received the **Technical University of Crete Excellence Award**.

Galileo Masters and Copernicus Masters 2020 | TUC SenseLab is Greece's Regional Organizer



TUC SenseLab Research Group was Greece's Regional Organizer for both major European Space Competitions **Galileo Masters** and **Copernicus Masters 2020**. The **Galileo Masters 2020** is the innovation competition, scouting for the most forward-thinking applications based on satellite navigation. Greece Challenge aims to promote and support truly innovative, feasible ideas that make use of European and international satellite navigation systems for the benefit of society in domains such as the environment, technology, tourism, defense, agriculture, natural disasters, transportation, location-based services, smart cities, e-democracy, unmanned systems, etc. Partners for Greece Challenge include PRAXI Network and European Commission. **Copernicus Masters** is an international innovation competition to foster the User Uptake of Copernicus applications through Sentinel satellites. Every year, the best solutions using Earth Observation data are awarded fantastic prizes!

'Random Fields for Spatial Data Modeling: A Primer for Scientists and Engineers', the new book by D. Hristopulos



Prof. Dionissios Hristopulos

Authored by Professor **Dionissios Hristopulos** (TUC School of Mineral Resources Engineering), a 2020 edition has been published by SPRINGER, entitled “**Random Fields for Spatial Data Modeling: A Primer for Scientists and Engineers**”. This book provides a bridge between statistical physics and spatial statistics and underlines links between geostatistics, applied mathematics and machine learning. It presents a unique approach, developed by the author, which has strong potential for fast and automated mapping of spatial processes. It also includes several graphs and three-dimensional plots, which help the readers to better understand the concepts. The book is published in the series Advances in Geographic Information Science and comprises 17 chapters.



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