

Machine Learners Archaeology Of A Data Practice

"This book investigates machine learning (ML), one of the most fruitful fields of current research, both in the proposal of new techniques and theoretic algorithms and in their application to real-life problems"--Provided by publisher.

These two volumes constitute the Proceedings of the 7th International Workshop on Soft Computing Applications (SOFA 2016), held on 24–26 August 2016 in Arad, Romania. This edition was organized by Aurel Vlaicu University of Arad, Romania, University of Belgrade, Serbia, in conjunction with the Institute of Computer Science, Iasi Branch of the Romanian Academy, IEEE Romanian Section, Romanian Society of Control Engineering and Technical Informatics (SRAIT) - Arad Section, General Association of Engineers in Romania - Arad Section, and BTM Resources Arad. The soft computing concept was introduced by Lotfi Zadeh in 1991 and serves to highlight the emergence of computing methodologies in which the accent is on exploiting the tolerance for imprecision and uncertainty to achieve tractability, robustness and lower costs. Soft computing facilitates the combined use of fuzzy logic, neurocomputing, evolutionary computing and probabilistic computing, leading to the concept of hybrid intelligent systems. The rapid emergence of new tools and applications calls for a synergy of scientific and technological disciplines in order to reveal the great potential of soft computing in all domains. The conference papers included in these proceedings, published post-conference, were grouped into the following areas of research: • Methods and Applications in Electrical Engineering • Knowledge-Based Technologies for Web Applications, Cloud Computing, Security Algorithms and Computer Networks • Biomedical Applications • Image, Text and Signal Processing • Machine Learning and Applications • Business Process Management • Fuzzy Applications, Theory and Fuzzy Control • Computational Intelligence in Education • Soft Computing & Fuzzy Logic in Biometrics (SCFLB) • Soft Computing Algorithms Applied in Economy, Industry and Communication Technology • Modelling and Applications in Textiles The book helps to disseminate advances in selected active research directions in the field of soft computing, along with current issues and applications of related topics. As such, it provides valuable information for professors, researchers and graduate students in the area of soft computing techniques and applications.

Tools of data comparison and analysis are critical in the field of archaeology, and the integration of technological advancements such as geographic information systems, intelligent systems, and virtual reality reconstructions with the teaching of archaeology is crucial to the effective utilization of resources in the field. E-Learning Methodologies and Computer Applications in Archaeology presents innovative instructional approaches for archaeological e-learning based on networked technologies, providing researchers, scholars, and professionals a comprehensive global perspective on the resources, development, application, and implications of information communication technology in multimedia-based educational products and services in archaeology.

This three-volume set LNCS 11139-11141 constitutes the refereed proceedings of the 27th International Conference on Artificial Neural Networks, ICANN 2018, held in Rhodes, Greece, in October 2018. The papers presented in these volumes was carefully reviewed and selected from total of 360 submissions. They are related to the following thematic topics: AI and Bioinformatics, Bayesian and Echo State Networks, Brain Inspired Computing, Chaotic Complex Models, Clustering, Mining, Exploratory Analysis, Coding Architectures, Complex Firing Patterns, Convolutional Neural Networks, Deep Learning (DL), DL in Real Time Systems, DL and Big Data Analytics, DL and Big Data, DL and Forensics, DL and Cybersecurity, DL and Social Networks, Evolving Systems – Optimization, Extreme Learning Machines, From Neurons to Neuromorphism, From Sensation to Perception, From Single Neurons to Networks, Fuzzy Modeling, Hierarchical ANN, Inference and Recognition,

Information and Optimization, Interacting with The Brain, Machine Learning (ML), ML for Bio Medical systems, ML and Video-Image Processing, ML and Forensics, ML and Cybersecurity, ML and Social Media, ML in Engineering, Movement and Motion Detection, Multilayer Perceptrons and Kernel Networks, Natural Language, Object and Face Recognition, Recurrent Neural Networks and Reservoir Computing, Reinforcement Learning, Reservoir Computing, Self-Organizing Maps, Spiking Dynamics/Spiking ANN, Support Vector Machines, Swarm Intelligence and Decision-Making, Text Mining, Theoretical Neural Computation, Time Series and Forecasting, Training and Learning.

Increasingly, crimes and fraud are digital in nature, occurring at breakneck speed and encompassing large volumes of data. To combat this unlawful activity, knowledge about the use of machine learning technology and software is critical. Machine Learning Forensics for Law Enforcement, Security, and Intelligence integrates an assortment of deductive Although many archaeologists have a good understanding of the basics in computer science, statistics, geostatistics, modeling, and data mining, more literature is needed about the advanced analysis in these areas. This book aids archaeologists in learning more advanced tools and methods while also helping mathematicians, statisticians, and computer scientists with no previous knowledge of the field realize the potential of the methods in archaeological experiments.

??This volume debuts the new scope of Remote Sensing, which was first defined as the analysis of data collected by sensors that were not in physical contact with the objects under investigation (using cameras, scanners, and radar systems operating from spaceborne or airborne platforms). A wider characterization is now possible: Remote Sensing can be any non-destructive approach to viewing the buried and nominally invisible evidence of past activity. Spaceborne and airborne sensors, now supplemented by laser scanning, are united using ground-based geophysical instruments and undersea remote sensing, as well as other non-invasive techniques such as surface collection or field-walking survey. Now, any method that enables observation of evidence on or beneath the surface of the earth, without impact on the surviving stratigraphy, is legitimately within the realm of Remote Sensing. ?The new interfaces and senses engaged in Remote Sensing appear throughout the book. On a philosophical level, this is about the landscapes and built environments that reveal history through place and time. It is about new perspectives—the views of history possible with Remote Sensing and fostered in part by immersive, interactive 3D and 4D environments discussed in this volume. These perspectives are both the result and the implementation of technological, cultural, and epistemological advances in record keeping, interpretation, and conceptualization.

Methodology presented here builds on the current ease and speed in collecting data sets on the scale of the object, site, locality, and landscape. As this volume shows, many disciplines surrounding archaeology and related cultural studies are currently involved in Remote Sensing, and its relevance will only increase as the methodology expands.

Large spectroscopic surveys are trailblazing endeavours in the study of stellar archaeology and near eld cosmology. Access to homogeneous databases of thousands of stellar spectra allow for a detailed and statistically satisfying look into the chemical abundance distribution of our Galaxy and its surrounding satellites, ultimately working towards a better understanding of galactic chemical evolution. This thesis presents the work of three new studies at the current frontier of stellar archaeology. Through the rst look at carbon-enhanced metal-poor (CEMP) stars using H-band spectra, six new CEMP stars and another seven likely candidates were found within the APOGEE database following Data Release 12. These stars have chemical compositions typical of metal-poor halo stars, however the alpha-abundances of two stars indicate possible origins in an accreted dwarf galaxy. A lack of heavy element spectral lines impedes further sub-classi cation of these CEMP stars, however, based on radial velocity scatter, we predict most are not CEMP-s stars which are typically found in binary systems. This

preliminary investigation warrants optical observations to confirm the stellar parameters and low metallicities of these stars, to determine the heavy-element abundance ratios and improve the precision in the derived abundances, and to examine their CEMP sub-classifications. Additionally, the first results for the spectroscopic follow up to the Pristine survey are presented. Using a sample of 149 stars, a success rate of 70% for finding stars with $[Fe/H]$

If machine learning transforms the nature of knowledge, does it also transform the practice of critical thought? Machine learning—programming computers to learn from data—has spread across scientific disciplines, media, entertainment, and government. Medical research, autonomous vehicles, credit transaction processing, computer gaming, recommendation systems, finance, surveillance, and robotics use machine learning. Machine learning devices (sometimes understood as scientific models, sometimes as operational algorithms) anchor the field of data science. They have also become mundane mechanisms deeply embedded in a variety of systems and gadgets. In contexts from the everyday to the esoteric, machine learning is said to transform the nature of knowledge. In this book, Adrian Mackenzie investigates whether machine learning also transforms the practice of critical thinking. Mackenzie focuses on machine learners—either humans and machines or human-machine relations—situated among settings, data, and devices. The settings range from fMRI to Facebook; the data anything from cat images to DNA sequences; the devices include neural networks, support vector machines, and decision trees. He examines specific learning algorithms—writing code and writing about code—and develops an archaeology of operations that, following Foucault, views machine learning as a form of knowledge production and a strategy of power. Exploring layers of abstraction, data infrastructures, coding practices, diagrams, mathematical formalisms, and the social organization of machine learning, Mackenzie traces the mostly invisible architecture of one of the central zones of contemporary technological cultures. Mackenzie's account of machine learning locates places in which a sense of agency can take root. His archaeology of the operational formation of machine learning does not unearth the footprint of a strategic monolith but reveals the local tributaries of force that feed into the generalization and plurality of the field.

ARCHEOSEMA, a meta-disciplinary project of theoretical, analytical and experimental archaeology, has been recently awarded by La Sapienza University of Rome. The project title is an acronym which sums up its two main theoretical foundations: the openness of modern archaeology (ARCHEO) to the analysis of physical, historical, linguistic signs (SEMA) underlying natural and cultural systems reconstructed and simulated through Artificial Sciences. This volume edited by Marco Ramazzotti, a Supplement to «Archeologia e Calcolatori», is a Special Issue dedicated to the memory of the English archaeologist David Leonard Clarke (1937-1976), and is a further attempt to collect some applicative studies of complex natural and cultural phenomena following the Artificial Intelligence computational models through the lens of Analytical Archaeology.

This book offers a much needed critical introduction to data mining and 'big data'. Supported by multiple case studies and examples, the authors provide everything needed to explore, evaluate and review big data concepts and techniques.

This 8-volumes set constitutes the refereed of the 25th International Conference on Pattern Recognition Workshops, ICPR 2020, held virtually in Milan, Italy and rescheduled to January 10 - 11, 2021 due to Covid-19 pandemic. The 416 full papers presented in these 8 volumes were carefully reviewed and selected from about 700 submissions. The 46 workshops cover a wide range of areas including machine learning, pattern analysis, healthcare, human behavior, environment, surveillance, forensics and biometrics, robotics and egovision, cultural heritage and document analysis, retrieval, and women at ICPR2020.

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The digital revolution is characterized by the convergence of technologies, rapidly advancing the 4th industrial revolution thereby blurring the lines between physical, digital and biological objects. The speed of the fourth revolution which evolves at an exponential rate cannot by any means be compared with any previous technologies. AI and IoT employ the interactions and operations in various fields such as home appliances, autonomous vehicles, nanotechnology, robotics, cognitive systems, self-driving cars and wearable devices. The potential of blockchain technology is realized in many sectors as security plays a crucial role everywhere. This book deeply discusses two of the most critical emerging fields of machine learning: blockchain technology and the Internet of Things.

Morphometrics is concerned with the study of variations and change in the form (size and shape) of organisms or objects adding a quantitative element to descriptions and thereby facilitating the comparison of different objects and organisms. This volume provides an introduction to morphometrics in a clear and simple way without recourse to complex mathematics and statistics. This introduction is followed by a series of case studies describing the variety of applications of morphometrics from paleontology and evolutionary ecology to archaeological artifacts analysis. This is followed by a presentation of future applications of morphometrics and state of the art software for analyzing and comparing shape.

This book explores the tension between analogue and digital as part of an evolving research programme and focuses on the sequencing of methods within it. The book will be an invaluable reference for scholars who routinely engage in critical sociological analysis of the digital workplace and find it easier to treat the digital as an object of study. It describes how the transformations taking place in the 10-year arc of a career spent doing fieldwork in the IT sector led the author to progressively embrace new forms of data and methods. In a time where sociological imagination takes the shape of whatever new phenomenon can be studied by transactional data and machine learning methods, it is a reminder that longstanding engagement with a particular field of practice is the basis of

empirical social science expertise. Gian Marco Campagnolo researches in the field of the social study of data science. He is Lecturer in Science, Technology and Innovation Studies at the University of Edinburgh and Faculty Fellow at the Alan Turing Institute, UK. He has previously had visiting appointments at the Copenhagen Centre for Social Data Science and the Centre de Sociologie de l'Innovation at the Ecole des Mines.

This book presents research efforts in the field of heritage. According to the principle “Open Minds-Open Science”, the approach of the researchers helps us to define, establish and affirm heritage in the cultural, social and political dimension of today’s world based on what we have achieved and be specific to the realities of the 21st century. Cultural heritage is made up of many big and small things. It is preserved through books, artifacts, objects, images, photographs, art and oral tradition. Sometimes we can touch and see what a culture is, other times it is intangible. From this point of view, this book, *Heritage*, is transdisciplinary, and contains the most diverse topics related to culture, art, nature, science, diplomacy and cultural policy. Users are increasingly interacting with machine learning (ML)-based curation systems. YouTube and Facebook, two of the most visited websites worldwide, utilize such systems to curate content for billions of users. Contemporary challenges such as fake news, filter bubbles, and biased predictions make the understanding of ML-based curation systems an important and timely concern. Despite their political, social, and cultural importance, practitioners' framing of machine learning and users' understanding of ML-based curation systems have not been investigated systematically. This is problematic since machine learning - as a novel programming paradigm in which a mapping between input and output is inferred from data - poses a variety of open research questions regarding users' understanding. The first part of this thesis provides the first in-depth investigation of ML-based curation systems as socio-technical systems. The second part of the thesis contributes recommendations on how ML-based curation systems can and should be explained and audited. The first part analyses practitioners' framing of ML by examining how the term machine learning, ML applications, and ML algorithms are framed in tutorials. The thesis also investigates the beliefs that users have about YouTube and introduces a user belief framework of ML-based curation systems. Furthermore, it demonstrates how limited users' capabilities for providing input data for ML-based curation systems are. The second part evaluates different explanations of ML-based systems. This evaluation uncovered an explanatory gap between what is available to explain ML-based curation systems and what users need to understand such systems. Informed by this explanatory gap, the second part of this thesis demonstrates that audits of ML systems can be an important alternative to explanations. This demonstration of audits also uncovers a popularity bias enacted by YouTube's ML-based curation system. Based on these findings, the thesis recommends performing audits to ensure that ML-based systems act in the public's interest. Keywords: Algorithmic Bias; Algorithmic Experience; Algorithmic Transparency; Algorithms; Fake News; Human-Centered Machine Learning; Human-Computer Interaction; Machine Learning; Artificial Intelligence; Recommender Systems; Social Media; Trust; User Beliefs; User Experience; Video Recommendations; YouTube

How big data and machine learning encode discrimination and create agitated clusters of comforting rage. In *Discriminating Data*, Wendy Hui Kyong Chun reveals how

polarization is a goal—not an error—within big data and machine learning. These methods, she argues, encode segregation, eugenics, and identity politics through their default assumptions and conditions. Correlation, which grounds big data's predictive potential, stems from twentieth-century eugenic attempts to “breed” a better future. Recommender systems foster angry clusters of sameness through homophily. Users are “trained” to become authentically predictable via a politics and technology of recognition. Machine learning and data analytics thus seek to disrupt the future by making disruption impossible. Chun, who has a background in systems design engineering as well as media studies and cultural theory, explains that although machine learning algorithms may not officially include race as a category, they embed whiteness as a default. Facial recognition technology, for example, relies on the faces of Hollywood celebrities and university undergraduates—groups not famous for their diversity. Homophily emerged as a concept to describe white U.S. resident attitudes to living in biracial yet segregated public housing. Predictive policing technology deploys models trained on studies of predominantly underserved neighborhoods. Trained on selected and often discriminatory or dirty data, these algorithms are only validated if they mirror this data. How can we release ourselves from the vice-like grip of discriminatory data? Chun calls for alternative algorithms, defaults, and interdisciplinary coalitions in order to desegregate networks and foster a more democratic big data. This book constitutes the proceedings of the 13th International Conference on Transforming Digital Worlds, iConference 2018, held in Sheffield, UK, in March 2018. The 42 full papers and 40 short papers presented together with the abstracts of 3 invited talks in this volume were carefully reviewed and selected from 219 submissions. The papers address topics such as social media; communication studies and online communities; mobile information and cloud computing; data mining and data analytics; information retrieval; information behaviour and digital literacy; digital curation; and information education and libraries.

Provides analytical theories offered by innovative artificial intelligence computing methods in the archaeological domain.

Contiene gli Atti del Convegno Internazionale (Milano, 13 marzo 2019) “Milano internazionale: la fragilità territoriale dei contesti archeologici, Atti del Convegno Internazionale” e l'International Conference on Metrology for Archaeology and Cultural Heritage (Florence, 4-6 December 2019) “Logic and computing. The underlying basis of digital archaeology”.

Processing multimedia content has emerged as a key area for the application of machine learning techniques, where the objectives are to provide insight into the domain from which the data is drawn, and to organize that data and improve the performance of the processes manipulating it. Arising from the EU MUSCLE network, this multidisciplinary book provides a comprehensive coverage of the most important machine learning techniques used and their application in this domain.

"This reference offers a wide-ranging selection of key research in a complex field of study, discussing topics ranging from using machine learning to improve the effectiveness of agents and multi-agent systems to developing machine learning software for high frequency trading in financial markets"--Provided by publishe

This book argues that Marxist theory is essential for understanding the contemporary industrialization of the form of artificial intelligence (AI) called machine learning. It

includes a political economic history of AI, tracking how it went from a fringe research interest for a handful of scientists in the 1950s to a centerpiece of cybernetic capital fifty years later. It also includes a political economic study of the scale, scope and dynamics of the contemporary AI industry as well as a labour process analysis of commercial machine learning software production, based on interviews with workers and management in AI companies around the world, ranging from tiny startups to giant technology firms. On the basis of this study, Steinhoff develops a Marxist analysis to argue that the popular theory of immaterial labour, which holds that information technologies increase the autonomy of workers from capital, tending towards a post-capitalist economy, does not adequately describe the situation of high-tech digital labour today. In the AI industry, digital labour remains firmly under the control of capital. Steinhoff argues that theories discerning therein an emergent autonomy of labour are in fact witnessing labour's increasing automation.

Knowledge Management and Knowledge Engineering is a fascinating field of research these days. In the beginning of EKAW, the modeling and acquisition of knowledge was the privilege of – or rather a burden for – a few knowledge engineers familiar with knowledge engineering paradigms and knowledge representation formalisms. While the aim has always been to model knowledge declaratively and allow for reusability, the knowledge models produced in these early days were typically used in single and very specific applications and rarely changed. Moreover, these models were typically rather complex, and they could be understood only by a few expert knowledge engineers. This situation has changed radically in the last few years as clearly indicated by the following trends: – The creation of (even formal) knowledge is now becoming more and more collaborative. Collaborative ontology engineering tools and social software platforms show the potential to leverage the wisdom of the crowds (or at least of “the many”) to lead to broader consensus and thus produce shared models which qualify better for reuse. – A trend can also be observed towards developing and publishing small but high-impact vocabularies (e.g., FOAF, DublinCore, GoodRelations) rather than complex and large knowledge models. This book includes a selection of articles from The 2019 World Conference on Information Systems and Technologies (WorldCIST'19), held from April 16 to 19, at La Toja, Spain. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges in modern information systems and technologies research, together with their technological development and applications. The book covers a number of topics, including A) Information and Knowledge Management; B) Organizational Models and Information Systems; C) Software and Systems Modeling; D) Software Systems, Architectures, Applications and Tools; E) Multimedia Systems and Applications; F) Computer Networks, Mobility and Pervasive Systems; G) Intelligent and Decision Support Systems; H) Big Data Analytics and Applications; I) Human–Computer Interaction; J) Ethics, Computers & Security; K) Health Informatics; L) Information Technologies in Education; M) Information Technologies in Radiocommunications; and N) Technologies for Biomedical Applications.

This open access peer-reviewed volume was inspired by the UNESCO UNITWIN Network for Underwater Archaeology International Workshop held at Flinders University, Adelaide, Australia in November 2016. Content is based on, but not limited

to, the work presented at the workshop which was dedicated to 3D recording and interpretation for maritime archaeology. The volume consists of contributions from leading international experts as well as up-and-coming early career researchers from around the globe. The content of the book includes recording and analysis of maritime archaeology through emerging technologies, including both practical and theoretical contributions. Topics include photogrammetric recording, laser scanning, marine geophysical 3D survey techniques, virtual reality, 3D modelling and reconstruction, data integration and Geographic Information Systems. The principal incentive for this publication is the ongoing rapid shift in the methodologies of maritime archaeology within recent years and a marked increase in the use of 3D and digital approaches. This convergence of digital technologies such as underwater photography and photogrammetry, 3D sonar, 3D virtual reality, and 3D printing has highlighted a pressing need for these new methodologies to be considered together, both in terms of defining the state-of-the-art and for consideration of future directions. As a scholarly publication, the audience for the book includes students and researchers, as well as professionals working in various aspects of archaeology, heritage management, education, museums, and public policy. It will be of special interest to those working in the field of coastal cultural resource management and underwater archaeology but will also be of broader interest to anyone interested in archaeology and to those in other disciplines who are now engaging with 3D recording and visualization.

A laboratory study that investigates how algorithms come into existence.

Algorithms--often associated with the terms big data, machine learning, or artificial intelligence--underlie the technologies we use every day, and disputes over the consequences, actual or potential, of new algorithms arise regularly. In this book, Florian Jatton offers a new way to study computerized methods, providing an account of where algorithms come from and how they are constituted, investigating the practical activities by which algorithms are progressively assembled rather than what they may suggest or require once they are assembled.

A new field of counterinvestigation across in human rights, art and law Today, artists are engaged in investigation. They probe corruption, human rights violations, environmental crimes and technological domination. At the same time, areas not usually thought of as artistic make powerful use of aesthetics. Journalists and legal professionals pore over opensource videos and satellite imagery to undertake visual investigations. This combination of diverse fields is what the authors call "investigative aesthetics": the mobilisation of sensibilities associated with art, architecture and other such practices in order to speak truth to power. Investigative Aesthetics draws on theories of knowledge, ecology and technology; evaluates the methods of citizen counter-forensics, micro-history and art; and examines radical practices such as those of WikiLeaks, Bellingcat, and Forensic Architecture. These new practices take place in the studio and the laboratory, the courtroom and the gallery, online and in the streets, as they strive towards the construction of a new common sense. Matthew Fuller and Eyal Weizman have here provided an inspiring introduction to a new field that will change how we understand and confront power today.

This book brings together the work of historians and sociologists with perspectives from media studies, communication studies, cultural studies, and information studies to address the origins, practices, and possible futures of contemporary machine learning.

From its foundations in 1950s and 1960s pattern recognition and neural network research to the modern-day social and technological dramas of DeepMind's AlphaGo, predictive political forecasting, and the governmentality of extractive logistics, machine learning has become controversial precisely because of its increased embeddedness and agency in our everyday lives. How can we disentangle the history of machine learning from conventional histories of artificial intelligence? How can machinic agents' capacity for novelty be theorized? Can reform initiatives for fairness and equity in AI and machine learning be realized, or are they doomed to cooptation and failure? And just what kind of "learning" does machine learning truly represent? We empirically address these questions and more to provide a baseline for future research. Chapter 2 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

This book describes a novel machine-learning based approach to answer some traditional archaeological problems, relating to archaeological site detection and site locational preferences. Institutional data collected from six Swiss regions (Zurich, Aargau, Grisons, Vaud, Geneva and Fribourg) have been analyzed with an original conceptual framework based on the Random Forest algorithm. It is shown how the algorithm can assist in the modelling process in connection with heterogeneous, incomplete archaeological datasets and related cultural heritage information. Moreover, an in-depth review of past and more recent works of quantitative methods for archaeological predictive modelling is provided. The book guides the readers to set up their own protocol for: i) dealing with uncertain data, ii) predicting archaeological site location, iii) establishing environmental features importance, iv) and suggest a model validation procedure. It addresses both academics and professionals in archaeology and cultural heritage management, and offers a source of inspiration for future research directions in the field of digital humanities and computational archaeology.

This second edition of the classic textbook, *The Archaeologist's Laboratory*, is a substantially revised work that offers updated information on the archaeological work that follows fieldwork, such as the processing and analysis of artifacts and other evidence. An overarching theme of this edition is the quality and validity of archaeological arguments and the data we use to support them. The book introduces many of the laboratory activities that archaeologists carry out and the ways we can present research results, including graphs and artifact illustrations. Part I introduces general topics concerning measurement error, data quality, research design, typology, probability and databases. It also includes data presentation, basic artifact conservation, and laboratory safety. Part II offers brief surveys of the analysis of lithics and ground stone, pottery, metal artifacts, bone and shell artifacts, animal and plant remains, and sediments, as well as dating by stratigraphy, seriation and chronometric methods. It concludes with a chapter on archaeological illustration and publication. A new feature of the book is illustration of concepts through case studies from around the world and from the Palaeolithic to historical archaeology. The text is appropriate for senior undergraduate students and will also serve as a useful reference for graduate students and professional archaeologists.

This book presents the proceedings of The 2020 International Conference on Machine Learning and Big Data Analytics for IoT Security and Privacy (SPIoT-2020), held in Shanghai, China, on November 6, 2020. Due to the COVID-19 outbreak problem,

SPIoT-2020 conference was held online by Tencent Meeting. It provides comprehensive coverage of the latest advances and trends in information technology, science and engineering, addressing a number of broad themes, including novel machine learning and big data analytics methods for IoT security, data mining and statistical modelling for the secure IoT and machine learning-based security detecting protocols, which inspire the development of IoT security and privacy technologies. The contributions cover a wide range of topics: analytics and machine learning applications to IoT security; data-based metrics and risk assessment approaches for IoT; data confidentiality and privacy in IoT; and authentication and access control for data usage in IoT. Outlining promising future research directions, the book is a valuable resource for students, researchers and professionals and provides a useful reference guide for newcomers to the IoT security and privacy field

The rise of intelligence and computation within technology has created an eruption of potential applications in numerous professional industries. Techniques such as data analysis, cloud computing, machine learning, and others have altered the traditional processes of various disciplines including healthcare, economics, transportation, and politics. Information technology in today's world is beginning to uncover opportunities for experts in these fields that they are not yet aware of. The exposure of specific instances in which these devices are being implemented will assist other specialists in how to successfully utilize these transformative tools with the appropriate amount of discretion, safety, and awareness. Considering the level of diverse uses and practices throughout the globe, the fifth edition of the Encyclopedia of Information Science and Technology series continues the enduring legacy set forth by its predecessors as a premier reference that contributes the most cutting-edge concepts and methodologies to the research community. The Encyclopedia of Information Science and Technology, Fifth Edition is a three-volume set that includes 136 original and previously unpublished research chapters that present multidisciplinary research and expert insights into new methods and processes for understanding modern technological tools and their applications as well as emerging theories and ethical controversies surrounding the field of information science. Highlighting a wide range of topics such as natural language processing, decision support systems, and electronic government, this book offers strategies for implementing smart devices and analytics into various professional disciplines. The techniques discussed in this publication are ideal for IT professionals, developers, computer scientists, practitioners, managers, policymakers, engineers, data analysts, and programmers seeking to understand the latest developments within this field and who are looking to apply new tools and policies in their practice.

Additionally, academicians, researchers, and students in fields that include but are not limited to software engineering, cybersecurity, information technology, media and communications, urban planning, computer science, healthcare, economics, environmental science, data management, and political science will benefit from the extensive knowledge compiled within this publication.

We already observe the positive effects of AI in almost every field, and foresee its potential to help addressing our sustainable development goals and the urgent challenges for the preservation of the environment. We also perceive the risks related to the safety, security, confidentiality, and fairness of AI systems, the threats to free will of possibly manipulative systems, as well as the impacts of AI on the economy,

employment, human rights, equality, diversity, inclusion, and social cohesion need to be better assessed. The development and use of AI must be guided by principles of social cohesion, environmental sustainability, resource sharing, and inclusion. It has to integrate human rights, and social, cultural, and ethical values of democracy. It requires continued education and training as well as continual assessment of effects through social deliberation. The "Reflections on AI for Humanity" proposed in this book develop the following issues and sketch approaches for addressing them: How can we ensure the security requirements of critical applications and the safety and confidentiality of data communication and processing? What techniques and regulations for the validation, certification, and audit of AI tools are needed to develop confidence in AI? How can we identify and overcome biases in algorithms? How do we design systems that respect essential human values, ensuring moral equality and inclusion? What kinds of governance mechanisms are needed for personal data, metadata, and aggregated data at various levels? What are the effects of AI and automation on the transformation and social division of labor? What are the impacts on economic structures? What proactive and accommodation measures will be required? How will people benefit from the decision support systems and personal digital assistants without the risk of manipulation? How do we design transparent and intelligible procedures and ensure that their functions reflect our values and criteria? How can we anticipate failure and restore human control over an AI system when it operates outside its intended scope? How can we devote a substantial part of our research and development resources to the major challenges of our time such as climate, environment, health, and education? Simple methods to aid in the determination of forensic or archaeological relevancy of skeletonized remains have been researched since the 1950s. With advances in microscopic imaging techniques and machine learning computer data analysis methods the relevancy of decontextualized, comingled remains has room for improvement. This thesis is a study done to pioneer a new approach to analyzing dental skeletal remains to determine forensic relevancy. Archaeological dental samples collected from the ancient city of Ur in modern day southern Iraq in addition to modern dental extractions were processed for scanning electron microscopy imaging. Archaeological and modern samples displayed different surface and dentinal tubule opening characteristics. The image files were then analyzed using a custom-built convolutional neural net model. The model's performance metrics indicate that the model made better than random predictions based on learned associations. Thus, the use of scanning electron microscopy and machine learning analysis techniques has potential in distinguishing archaeological dental samples from modern dental samples.

This book is a printed edition of the Special Issue "Remote Sensing and Geosciences for Archaeology" that was published in Geosciences

Making Coding and Machine Learning Fun: Use Your Evolutionary History to Your Advantage, Learn All About AI & Have a Blast Doing So! Would you like to explore the exciting world of AI and machine learning without boring examples? What if I said you can learn and master these subjects and laugh at the same time? What if I told you that you evolved to code? Stone Age Code illustrates the evolution of improbable data scientists. Shane Neeley, the author of this exceptional book, shows the easiest and funniest approach to learning to code. Praise for Stone Age Code: "The book is simply brilliant and genuine, so friendly and stimulating!" — Emiliano Bruner, Ph.D., Hominid

Paleoneurology Researcher, Centro Nacional de Investigación sobre la Evolución Humana (Spain) “A charming, informative, and thought-provoking read.” — Adam Cornford, poet, journalist, and a great-great-grandson of Charles Darwin. “My overall impression as a lifelong professor of literature is that this book is engaging, humorous, thought-provoking, creatively written, and artistically inspired.” — Alwin Baum, Ph.D., Professor of Literature, California State University Throughout this book, you will gain an understanding of deep learning with neural nets, natural language generation, and AI art. But don’t worry; as technical as it may sound, Shane Neeley delivers these complex topics in an entertaining manner. Contrary to popular belief, you can code even if you’re bad at math. Containing no equations or code, this book still teaches machine learning literacy, and in an amusing way. Now’s your chance to become an AI forefather to future generations. Or just become inspired to build a funny robot that says strange things! Computational creativity and humor is here and fun to play with. Here’s a small preview into chapters of this unique book: Chapter 1: A Greater Ape Approaches Chapter 2: Natural Language Selection Chapter 4: How to Rear Machines (Part 1) Chapter 6: You Don’t Need Permission Chapter 10: Computational Creativity and the AI’s Audience Chapter 13: First Deployment Chapter 14: Monkey Business Strategy Chapter 15: Being an AI’s Dad And much more! (20 chapters and 18 robot-written excerpts in total) Fake Praise for Stone Age Code, written by AI: “Shane Neeley, data scientist, biologist, and bestselling author of High Frequency and Data Density, answers each and every AI question you’ve ever asked.” — Acclaim-Writing-Robot “Book of the year (so far).” — Acclaim-Writing-Robot “Read it, laugh at it, and move on.” — Acclaim-Writing-Robot Scroll up, click on “Buy”, and Get Your Copy Now! [Copyright: 97c7286e46a8c8f3ad2a15ccb6545609](https://www.amazon.com/dp/B089888888)