Book of Abstracts

AI tool to be used for forensic purposes: the ethical and legal tools needed

Iñigo de Miguel Beriain
University of the Basque Country.
Ikerbasque. Basque Foundation for Science
PANELFIT Project (panelfit.eu)

Abstract

The creation and/or use of an artificial intelligence tool involves a considerable effort from many points of view. The need to respect data protection regulations as well as the ethical principles that determine the morality of actions are extraordinarily important in this respect. In recent years, numerous regulatory initiatives have been developed to determine the framework to be followed by researchers, innovators and users in this field. Important regulations such as the General Data Protection Regulation (GDPR), or

documents such as the 'Ethics guidelines for trustworthy AI', the three documents on the subject published by the European Commission in February 2020 or the draft of the AI Regulation, which is expected to be approved in the future, are good examples of what is at stake and the attention it has attracted.

Despite this extensive regulatory deployment, it happens all too often that developers and users of AI mechanisms make serious mistakes in terms of respecting data protection regulation. This seriously compromises the rights of the data subjects to whom these data are associated. This, in many cases, happens because there is not yet an adequate culture of knowledge and respect for the regulations in force. This session aims to provide a brief reflection that will allow those who are trying to build an AI tool that meets ethical and legal requirements to fulfill their objective in a reasonably simple way. To that end, some very basic tips are introduced here, simple recipes that, however, if implemented, would prevent many of the bad practices that happen all too often. Obviously, these are only initial guidelines, which should be complemented by other more extensive materials, but they can serve well as a first and essential contact with the topic.

Innovation through the liaison with academia and end users

Dr Stephen Bleay

London South Bank University, UK

Abstract

The speaker will give a short overview of his previous experience working at the UK Home Office Centre for Applied Science & Technology in the area of fingerprint research. This included the setting up of a liaison group involving police practitioners, academic institutions and industrial suppliers of forensic equipment with the aim of driving collaborative activities. For this particular group the focal point of such activities was the Fingermark Visualisation Manual, aiming to mature novel fingermark visualisation processes from theoretical concepts to an operational validated process that can be used on casework. The Manual (and associated journal publications including the IFRG Guidelines) detail the levels of research required to advance the Technology Readiness Level of a visualisation process, and these steps will be outlined in the talk. It is recognised that for processes requiring specialised treatment conditions there is an issue

in overcoming the ‘valley of death’ between demonstration in a research laboratory and a practical equipment that can be used in an operational facility. Examples will be given of processes that have utilised collaboration to bridge the valley of death, including the historic details of the vacuum metal process and some more recent activities.

IP Law for researchers’

Daria Kim

Senior research fellow at the Max Planck Institute for Innovation and Competition

Abstract

One of the functions of intellectual property (IP) is facilitating the development of markets for intangible assets such as information and technology. In my presentation, I will provide an overview of IP tools relevant to forensic researchers. Which outcomes of forensic research can be protected as IP, and under what conditions? Can research data constitute IP? Are video images generated in forensic investigations copyright-eligible? Which IP instruments are applicable to software? What are the relative benefits of patents and trade secrets as a means to protect forensic methods? What aspects need to be addressed in the licensing and non-disclosure agreements? In the presentation, I will address basic considerations that can inform the choice of an optimal IP instrument. The participants will be welcome to discuss real-life or hypothetical examples that can illustrate the discussion.

Translation from research to practice for forensic soil science

Lorna Dawson

Professor Lorna Anne Dawson, PhD, CSci

Abstract

I will discuss the development of the discipline of forensic soil science and how we have contributed to an evolution from a cottage industry to a quantitative accredited system in the UK. I will show how new developments zeitgeist require experimentation, validation, cooperation, peer review and require to be fully tested before being ‘field ready’ never mind what is required fir your science and you to be ‘court ready’. This level of testing varies across the legal systems of the world, but the attributes of curiosity, integrity,

honesty and adherence to good ethical principles is fundamental in all nations and vitally important across all disciplines.

IP Law and Algorithmic Enforcement Online: an Overview with one case study

Giancarlo Frosio
Associate Professor
Co-director of CEIPI Master 2 in EU and Int'l IP Law

Abstract

This session explores the possibilities arising from devices that automatically enforce intellectual property rights, with emphasis on AI's applications in content moderation on digital platforms. In particular, this session will map the complex conundrum triggered by algorithmic enforcement in the IP domain with special emphasis on copyright and trademark enforcement online. In doing so, the session will, first, briefly explain what algorithmic enforcement online actually is and which automated tools are deployed in daily practice, such as Alibaba's complex AI-powered technology to tackle online counterfeit and piracy or YouTube Content ID, two of many technologies that rely on digital fingerprinting to match an uploaded file against a database of protected works provided by right holders. Second, this session will dig into voluntary, judicial and legislative measures that have been promoting the emergence of algorithmic enforcement online, with emphasis also on allocation of costs of automated enforcement. In this context, this session will also discuss the emergence of online algorithmic monitoring and filtering technologies beyond moderation of IP infringing content. In particular, algorithmic filtering online emerges also as a response to regulatory frameworks imposing heavy fines on online platforms failing to take down illegal content, including hate speech, incitement to terrorism and cyber-bullying. Third, this session will assess tensions between algorithmic enforcement and human rights, including due process, freedom of information, freedom expression, privacy and freedom of business. In conclusion, this session will discuss solutions for promoting transparency and accountability of algorithmic enforcement and limiting the negative externalities of the so-called black box society.

Seeing the Light: a Forensic Science Odyssey

Pierre Margot
Honorary professor of forensic science.
University of Lausanne, Switzerland

Abstract

Papillary ridge patterns are so diverse that they became the epitomy of individuality. The detection of the impressions made by these patterns rapidly became the most reliable way to both identify known criminals (recidivists) but also, criminals using the fingermarks they left inadvertently on scenes of crime, by comparison with suspected individuals.

For almost 60 years, various means of detection were developed (powdering, fuming with iodine, chemical developments such as with silver nitrate or ninhydrin, etc.), but all techniques, based on direct visualisation, were limited in sensitivity and often lacked selectivity. In 1977, a report by Dalrymple and colleagues claimed detection of luminescence of fingermarks under the light of LASERs, therefore a potential for sensitive and selective detection of these marks became reality. The light intensity (potentially destructive), the delimited operating wavelengths (monochromatic laser lines) and the relatively high cost of LASERs were drawbacks. Due to the lack of flexibility, research focussed on changing the chemistry of detection to fit optimal absorption wavelengths compatible with LASERs to create highly luminescent products. On the other hand, a search for alternatives to LASERs in the form of what is now called FLS – Forensic Light Sources led to a race between research teams and countries. From the initial ideas to the conception, the hurdle in developing an industrial product and the success is an odyssey over several years, with many contributors from chemistry, physics, forensic science, business partners. This process will be described, and contributors recognised, from the initial concept, the prototyping, the connection with potential manufacturer, to the current Polilight® of Rofin. Some examples of the increase in both sensitivity and selectivity will also be shown.

“Is it possible a patent for a forensic pathologist?”

Massimo Montisci

MD, PhD, Full Professor of Legal Medicine
Dept. Cardio-Thoraco-Vascular Sciences and Public Health University of Padova
Via Falloppio n.50 – 35121 Padova (ITALY)

Abstract

The possible creation of a patent in the forensic pathology opens to a broad reflection in the scientific field of the discipline, which is related to the answer to three fundamental questions. First, "why" to create a patent. Surely the vastness of the sector and the considerable presence of uncertainties in the knowledge in this area, creates a sort of “black hole”, which strongly hinders the connection between "research" and the "market" in the scientific sector. This pushes researchers to fill the knowledge gaps, using new methods, with the aim not only of implementing knowledge, but also of fully carrying out the purposes that characterize the activity in the forensic field, that is to provide solid "scientific evidence" that effectively leads to the identification of the "truth".

The second important question that must arise in this area concerns "which" application sector of forensic pathology can be the subject of a patent, considering the breadth of the discipline that ranges from traumatology to the aetiology of natural pathologies, from the role of toxics in the cause of a death to the presence of substances in a crime scene, from the identification of the PMI (Post-Mortem Interval) to the dynamics of death production, etc. These are all sectors of forensic pathology in which the use of new methodologies and/or innovative techniques (or instruments) can represent an implementation of knowledge, bridging the "gap" between basic and applicative research and the market, in which the new instruments and/or methods are marketed, useful for the forensic pathologist to solving everyday problems.

The third and last, but not least, question concerns the "modality" with which to reach a patent, considering the multiplicity of sectors of forensic pathology that can be patented. The answer to this question fits in a very emblematic way to personal experience, which saw the creation of a "spin-off" (or "start-up") with the home university (in my case the University of Padua), that is the creation of a company formed by private subjects, professors at the University and the University itself. Within this company, a research

project related to the dynamics of occurrence of deaths from suicide and their differentiation with the homicide and the accidental deaths has been included, which led to a scientific publication on FSI in 2019. This, unfortunately, did not allow the innovative methodology created, communicated internationally, to be patented in the Italian context (at low costs), but only an American level (the USA allows the presentation of a patent within one year of scientific publication, contrary to the Italian context, which prohibits the disclosure of the patent object to the scientific community).

In this way, a patent was filed by the University of Padua in the USA, through special American support structures, for the patenting of the methodology developed and validated retrospectively and prospectively with an appropriate, statistically significant cases study.

The final goal after patenting is to bring “scientific discover” (ie the “knowledge") to the market, with strong implications for both sectors, represented for example, in the personal case, by the use and insertion of the patented method in the context of a smartphone or tablet, with the correlated result of a fast application diffusion of the method, and in a rapid marketing of the same, economically profitable.

In conclusion, what has been outlined represents an easy way in which research in the forensic field can pass through the "Valley of Death", effectively allowing to enter the market in a profitable way for both sectors (forensic research and forensic market).

Let’s Business Plan!

Prof. Stefania Servalli

Full Professor-University of Bergamo

Abstract

The presentation is about the role and the building of the Business Plan in bridging the Death Valley. The importance of a Business Plan will be exposed, considering the different elements to consider to prepare an effective Business Plan. The way to present your business/project and your team are part of this process. The representation of the operations involved and users experience, the SWOT analysis, considering industry, market and competitors’ analysis are also fundamental, as your roadmap and main financial aspects.

Introduction: how to present your idea to investors

Zoltán Székely

Co-founder and Co-owner of Székely Family and Co.

Abstract

A well-known Venture Capitalist firm receives around 3000 applications per year, they find about 200 interesting. Many great ideas fail at initial presentation and loose valuable time, maybe even missing the window of opportunity for the market. One of the greatest returns of investment is provided by the time and money invested into forging a great presentation capable of raising attention and ad the time serious enough to create enduring interest. Attendees will be provided with and introduction to the issue, several tips on how to present their ideas to investors, supported by several good practices and common mistakes.

Accumulative fundraising

Out of the 200 interesting opportunities, at the end the VC company invests in 20 startups each year. Compared to the original 3000 submissions, this is a 0.7% chance got get yourself funded. Accumulative fundraising approach can be used to mitigate this: the fundraiser designs a complex plan to identify, target and pursuit parallel funding opportunities. This can include a combination of private and public funds, grants, loans, prizes as well as using available in-kind contribution or support provided by national, EU or international ecosystems. The lesson will give you a general overview on the types of opportunities, their typical costs and benefits plus a few examples on key opportunities and threats, for example LBO or various exit plans.

The three critical elements of startup success

About 8% of the 20 funded startups will be successful and generate income great enough for return of investment. Experience shows that there are three critical elements necessary to achieve success – and money is not one of them. Money is only the indicator which flows where those elements are available in a proper amount. The real challenge is to have these three elements in the right composition at the right time. Participants of this

session will gain insight on which are those three critical elements and how to find and combine them.

Technology transfer and start-ups in the quintuple helix

European Union (EU) is fostering the quintuple helix approach as it recognizes sustainable development and innovation as important development priorities. The quintuple helix represents a new framework which includes new knowledge, more stakeholders with sustainable development at its center. Technology transfer and start-ups are key elements of bringing those innovations to market, contributing to circulation of knowledge. The presentation will provide an overview on the concept on how these elements change their roles in transforming from a triple helix to a quintuple helix structure.