CounteR

Editorial

Dear Readers,

Welcome to the 2023 Winter edition of the CounteR Project's Newsletter!

Issue #5 offers an in-depth digest of the scientific publications, authored by renown researchers and field experts from among our consortium partners. This digest will continue across Issue #6. The "Special Interview" rubric features BGP's Chief Inspector Minko Pondev, shedding light on the role that LEAs play within the project's consortium. Issue #5 will also bring our readers to Brussels where

an insightful discussion forum took place on ethical aspects, stemming from the introduction of AI technologies in law enforcement. At that event, which was an opportunity for CounteR to interact with industry colleagues, the panellists noted that, in general, the people are polarised regarding the rapid integration of AI into law enforcement: some want for this process to become faster, while others have their doubts and fears. Enjoy the newsletter's full content and please send us your feedback – we would welcome readers' suggestions for Issue #6, which is due to be released in spring.

Sincerely yours,
The Editorial Team from EI

IN FOCUS: "CounteR is a Perfect Opportunity for the Bulgarian Police to Embrace New Technologies in the Prevention of Radicalisation"

Chief Inspector Minko Pondev: "CounteR is a Perfect Opportunity for the Bulgarian Police to Embrace New Technologies in the Prevention of Radicalisation".

The CounteR consortium includes six law-enforcement agencies (LEAs) – the Portuguese Criminal Police (Polícia Judiciária/PJ); the University of the Bavarian Police (Hochschule für den Öffentlichen Dienst in Bayern/HfoD); Romania's Protection and Guard Service (Serviciul de Protecţie şi Pază România/SPP); the State Police of Latvia (Valsts

policija/SPL); the French Homeland Security General Directorate (Direction Générale de la Sécurité Intérieure /DGSI); and the Bulgarian National Police General Directorate (BGP).

In previous editions of the CounteR newsletter's IN FOCUS section, HfoD was presented through interviews with Dr. Holger Nitsch and Mr. Tobias Mattes. In Issue #5, we have the pleasure to introduce BGP's Chief Inspector Minko Pondev.
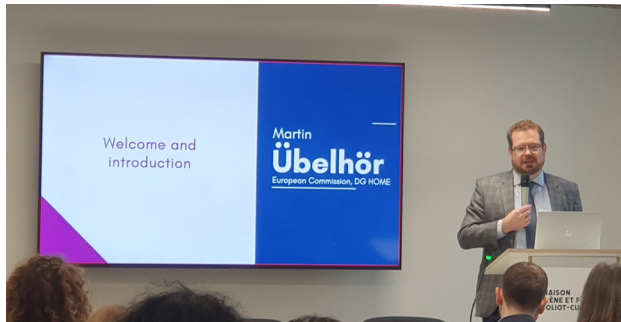
Highlights from the "Ethical and Legal Aspects of AI for Law Enforcement" Conference

On January 25-26, 2023, CounteR attended a conference on AI technologies, used by law enforcement, with a focus on ethical and legal aspects.

The conference was organised in Brussels by EC-funded projects ALIGNER, popAI, STARLIGHT (all stemming from the same H2020 call) and the AP4AI project and with the support of **DG-Home**, and handled issues related to the legal, ethical, operational and social aspects of the use of AI in a civil security context.

•**AP4AI** creates a global framework for AI accountability for policing, security and justice. The project's framework is grounded in empirically verified accountability principles for AI as carefully researched and accessible standard that supports internal security practitioners;

•**ALIGNER** is a coordination and support project that aims to bring together European actors concerned with AI, law enforcement, and policing to collectively discuss needs for paving the way for a more secure Europe;

• **popAI** aims at fostering trust in the application of AI and AI-enable mechanisms in the security domain by increasing awareness and social engagement from multiple sectors. This approach will bring a unified European view across LEAs; and

• **STARLIGHT**, through which LEAs will collaboratively develop their autonomy and resilience in the use of AI for tackling major criminal threats, in a community that brings them together with researchers, industry and practitioners in the security ecosystem.

On the conference's agenda were a diverse variety of panels and workshops with renowned speakers and panellists in each. The EU Agency for Funda-

mental Rights (FRA) moderated a panel on the legal and ethical collection and use of data in law enforcement. Other panels focused on the legal grey areas in the development of AI tools.

Panellists noted that, in general, the people are polarised regarding the rapid integration of AI into law enforcement: some want for this process to become faster, while others have their doubts and fears. In about four years, AI-driven attacks are predicted to be effective; while in the longer run, AI may create completely new ways of attacking, giving more way to offensive uses, a representative of the CyberPeace Institute noted.

Other project representatives delivered a presentation of the Accountability Principles for Artificial Intelligence (AP4AI), including its relevance for the future EU AI Act. The team presented the prototype of their online conformity assessment tool, which is designed to guide internal security practitioners through the evaluation of the compliance of their internal processes when developing and deploying AI tools with the twelve AI accountability principles. An interactive workshop gathered validation feedback, which will be used to further refine and develop the project's online tool.

The event also featured a workshop on ensuring compliance during research and development by highlighting the approach used by the STARLIGHT project, while another session was on compliance during use with insights from the ALIGNER project's methodology. The last workshop, moderated by popAI, was dedicated to the controversies and the sociotechnical imaginaries for AI in civil security.

The experts and practitioners attending the conference – including a representative of EI as a member of the CounteR consortium – came from law enforcement agencies, academia, civil society, and commerce and industry. In attendance were also institutional representatives from the EC and EU Agencies such as Europol, CEPOL, and Frontex.

SPECIAL PORTFOLIO OF COUNTER PROJECT'S SCIENTIFIC PUBLICATIONS, PART 1

A milestone aspect of the CounteR Project's implementation are the scientific publications and specialised articles, authored by renown experts and scientists from leading research institutions that make part of the CounteR consortium. A number of state-of-the art publications that add scientific value to CounteR's domains and project goals have been made available on our website's Publications Section. In Issue #5, the CounteR newsletter dedicates space to present a digest of some of these articles to our readers. The second portion of publications will be featured in Issue #6.

Multilingual Auxiliary Tasks Training: Bridging the Gap between Languages for Zero-Shot Transfer of Hate Speech Detection Models

Authors: Syrielle Montariol, Arij Riabi, Djamé Seddah / INRIA

Zero-shot cross-lingual transfer learning has been shown to be highly challenging for tasks involving a lot of linguistic specificities or when a cultural gap is present between languages, such as in hate speech detection. In this paper, the authors highlight this limitation for hate speech detection in several domains and languages using strict experimental settings. Then, they propose to train on multilingual auxiliary tasks – sentiment analysis, named entity recognition, and tasks relying on syntactic information – to improve zero-shot transfer of hate speech detection models across languages. The researchers finally show how hate speech detection models benefit from a cross-lingual knowledge proxy brought by auxiliary tasks fine-tuning and highlight these tasks' positive impact on bridging the hate speech linguistic and cultural gap between languages.

functionality	immigrants	women
slur	-14.72	-17.22
negate	-10.34	0.82
spell	-7.56	5.78
derog	-9.37	7.92
threat	-2.61	1.63
ident	5.57	-3.22
counter	-2.43	10.03
ref	6.62	7.11
profanity	-3.75	18.33
phrase	18.57	5.63

Figure 1: Difference between monolingual and zero-shot cross-lingual performance by functionality when fine-tuning XLM-R on hate speech detection (no auxiliary task), averaged over all language pairs, by domain.

Subdiffusive semantic evolution in Indo-European languages

Authors: Bogdán Asztalos, Gergely Palla, Dániel Czégel / ELTE

How do words change their meaning? Although semantic evolution is driven by a variety of distinct factors, including linguistic, societal, and technological ones, the authors find that there is one law that holds universally across five major Indo-European languages: that semantic evolution is strongly subdiffusive. Using an automated pipeline of diachronic distributional semantic embedding that controls for underlying symmetries, the researchers show that words follow stochastic trajectories in meaning space with an anomalous diffusion exponent $\alpha=0.45\pm0.05$ across languages, in contrast with diffusing particles that follow $\alpha=1$.

Randomisation methods indicate that preserving temporal correlations in semantic change directions is necessary to recover strongly subdiffusive behaviour; however, correlations in change sizes play an important role too.
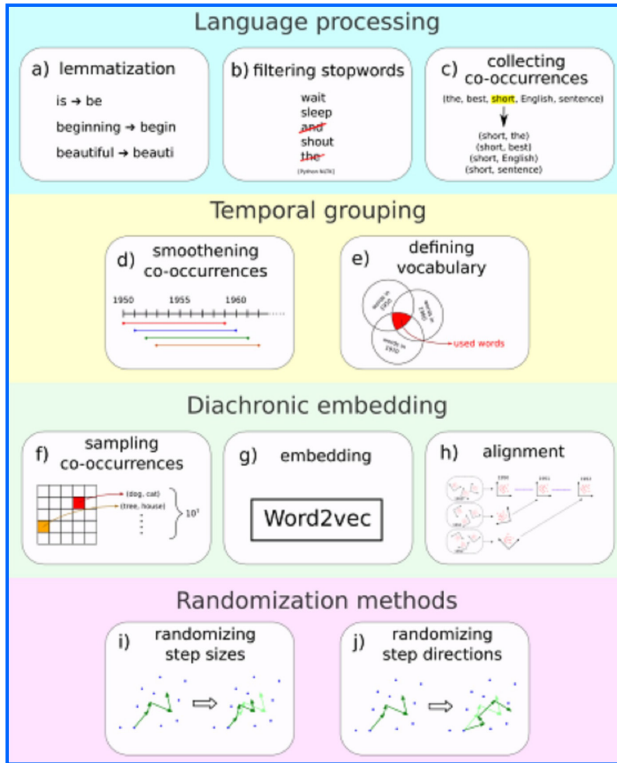
Figure 2: Key steps of the pipeline that creates diachronic embeddings from raw google gram data

The experts furthermore show that strong subdiffusion is a robust phenomenon under a wide variety of choices in data analysis and interpretation, such as the choice of fitting an ensemble average of displacements or averaging best-fit exponents of individual word trajectories.

Can Character-based Language Models Improve Downstream Task Performance in Low-Resource and Noisy Language Scenarios?

Authors: Arij Riabi, Benoît Sagot, Djamé Seddah / INRIA

Recent impressive improvements in NLP, largely based on the success of contextual neural language models, have been mostly demonstrated on at most a couple dozen high-resource languages. Building language models and, more generally, NLP systems for non-standardised and low-resource languages remains a challenging task. In this work, the authors focus on North-African colloquial dialectal Arabic written using an extension of the Latin script, called NArabizi, found mostly on social media and messaging communication. In this low-resource scenario with data displaying a high level of variability, the researchers compare the downstream performance of a character-based language model on part-of-speech tagging and dependency parsing to that of monolingual and multilingual models. They show that a character-based model trained on only 99k sentences of NArabizi and fined-tuned on a small treebank of this language leads to performance close to those obtained with the same architecture pre-trained on large multilingual and monolingual models. Confirming these results on much larger data set of noisy French user-generated content, the authors argue that such character-based language models can be an asset for NLP in low-resource and high language variability settings.

Layer Config	MODEL+TASK			MODEL+MLM+TASK			Layer Config	MODEL+TASK			MODEL+MLM+TASK		
	UPOS	UAS	LAS	UPOS	UAS	LAS		UPOS	UAS	LAS	UPOS	UAS	LAS
0	68.38	66.21	50.61	70.89	64.74	49.81	0	73.63	65.36	52.08	75.43	66.21	52.98
0-5	77.93	70.51	57.04	80.95	72.21	59.45	0-5	79.40	**69.19**	57.23	82.37	69.90	58.08
4-7	79.63	70.18	57.56	81.57	72.54	60.92	4-7	80.62	69.61	57.33	83.74	72.45	62.05
6-11	80.39	71.88	58.41	**83.65**	74.15	62.15	6-11	**80.72**	68.53	56.76	**85.02**	72.40	61.63
11	**81.14**	**72.59**	**60.35**	83.08	73.77	62.00	11	80.48	**69.19**	**57.89**	84.55	**73.82**	**62.67**
all	80.15	70.46	58.08	**83.65**	**74.62**	**62.62**	all	80.25	**69.19**	56.14	84.31	72.78	61.67

(a) **CamemBERT**   (b) **mBERT**

Layer Config	NArabizi 99k			Sample OSCAR 99k			NArabizi + Oscar 66k+33k		
	UPOS	UAS	LAS	UPOS	UAS	LAS	UPOS	UAS	LAS
0	78.92	**70.79**	57.99	78.26	69.61	56.76	79.25	69.33	57.14
0-5	79.63	70.23	57.99	79.54	70.13	56.76	79.06	68.05	55.25
4-7	80.53	69.28	57.47	79.77	**70.75**	**57.84**	80.10	**69.90**	56.76
6-11	80.34	70.60	57.84	78.26	68.43	55.58	**80.91**	69.66	**57.80**
11	**81.19**	70.56	**58.65**	78.83	69.52	56.33	80.67	**69.90**	57.75
all	79.96	69.47	57.84	**80.62**	68.76	56.76	80.15	**69.90**	57.56

(c) **CharacterBERT**

Figure 3: Performances of the models on the NArabizi treebank using different combinations of the model layers for embeddings.

IN FOCUS

"CounteR is a Perfect Opportunity for the Bulgarian Police to Embrace New Technologies in the Prevention of Radicalisation"

(from p. 1)

In this interview, Mr. Pondev explains that minority populations at risk of being radicalised, negative attitudes towards migrants, and post-COVID consolidation of extreme Conservative views are among the challenges that Bulgaria faces in terms of radicalisation prevention.

Mr. Pondev, what are BGP's mission, priorities and scope of work?

The National Police General Directorate engages in detection, protection, and crime investigation functions. In addition, our prerogatives include investigation of crimes, information sharing and awareness-raising, crime control, preventive measures, and administrative penal activities. BGP also provides administrative services to citizens, as defined by law. Our Directorate is in charge of overseeing the activities of the regional-level directorates of the Bulgarian Ministry of the Interior – most importantly, in the domains of prevention, curbing and detection of crimes and any other action, targeted against the social order.

Which activities of the CounteR Project is BGP involved in, and how?

BGP's contribution to the project is mainly focused on its capacity as an end-user. In this regard, the National Police participates in defining the requirements of the national-level LEAs based on the previous practice and specific case studies. In addition, our experts provide a contribution for the final application – as we know, this activity is of utmost importance to CounteR's successful implementation and marketing strategy. BGP will also actively participate in the planned field demonstrations and tests of the platform, thus ensuring that this integrated solution will be put into practical use at the national level.

How will the CounteR solution be beneficial for BGP's future work?

Our Directorate will analyse and use the results of the project and integrate them into its specialised areas of activity. We also foresee the organization of additional activities for spreading the knowledge and experience of the CounteR Project, in order to more effectively curb radicalising movements and radical propaganda in Bulgaria.

What is the situation with online and offline radicalisation in Bulgaria?

Radicalisation is a global process that seriously affects Bulgarian society as well. For years, in certain regions – specifically in Southern Bulgaria, inhabited by compact Turkish-speaking Roma population, the activation of extreme pro-Islamist organisations and the attraction of representatives of the Roma ethnic group to an extreme Islamist ideology have been observed. The main factors facilitating the radicalisation of members of this community are the low standard of living, as well as the lack of education and social perspective. In the context of the global migration processes, the increased traffic of migrants from Asia and Africa through Bulgaria led to an increase in negative attitudes among Bulgarians towards people from these regions. Social media has seen an escalation of hate speech and scepticism, blaming Europe for not being able to successfully manage the problems related to migrants from Africa, the Middle East and other problematic regions. We also observe a tendency of consolidation among people with more conservative to extreme ideological positions – they tend to organise themselves more actively for expressing their views by for example conducting mass demonstrations, marches, pilgrimages, protests, and others. The COVID-19 pandemic and the state-imposed health prevention measures have led to an increase in the influence of the Internet media on the views and behaviour of large segments of the population, the youth in particular. The limited "real-life" social interactions between people, which are getting replaced by a

virtual reality and lockdowns, have led to an exacerbation of the people's need for connecting and identifying with significant supra-personal ideas and concepts: and, of course, this situation serves as a fertile ground for all types of extreme organisations to flourish.

What does the BGP do in order to curb the spread of radicalisation and prevent these worrying trends?

The National Police General Directorate is actively engaged in the prevention and investigation of such types of illegal activities. We use various analytical techniques and other relevant policing methods. Our institution puts a serious focus on prevention through organising information seminars and public awareness-raising campaigns, targeted specifically to vulnerable groups and individuals.

The CounteR Project aims at offering innovative technological solutions and instruments that would facilitate the work of the LEAs in detection and prevention of radicalisation. What is the importance of embracing new technologies for the Bulgarian National Police?

The use of modern technology by law offenders must receive its adequate technological response by law enforcement agencies. In this sense, the Bulgarian Police makes no exception to this trend. In order to investigate, counteract and protect people and groups from radicalisation threats, the policing institutions such as BGP should have modern and technologically adequate tools, as well as well-trained personnel.

How is BGP's participation in the CounteR Project contributing to its personnel gaining more experience and skills? How would CounteR make their work more effective?

Our participation in the CounteR project fosters the experience of the Bulgarian police in the field of adopting new tools for identifying extremist content. This will undoubtedly lead to a more effective approach in countering radicalisation and will also help to refine the methods applied in preventive work. BGP's participation in the project will also improve the level and scope of cooperation with partner organisations – LEAs, NGOs, and the academia at the transnational level. We believe that the introduction of new technologies in the Bulgarian police is of primary importance. The CounteR project is a perfect example in this regard, especially when the CounteR solution is put into operation. The application will enable a faster communication between services, timelier response of front-line officers, and – ultimately – will lead to detecting and preventing of a higher number of cases of radicalisation. Let me give you a broader example. During the summer tourist season, a large part of the Bulgarian "guest workers" return to Bulgaria. These persons have not been in their home country for almost 11 months and therefore were not under our control – in other words, we do not know what is happening to them, because they have been abroad. For such persons, the colleagues in the other country would have entered into the system data of the type – possibly radicalised, or participated in radical groups, or showing radical inclinations, etc. So, when the person enters Bulgaria and is checked, the Bulgarian police will see all the data about him and will be able to decide what measures to take against him during his stay in the country. In parallel, the Bulgarian police will also enter relevant data for this person and for other persons in the platform during their stay in our country. All partners will be able to draw data from the platform and update it on an ongoing basis.

Since 2018, Chief Inspector Minko Pondev is the Head of the National Football Information Point (NFIP) within BGP. He brings solid expertise and management experience in the domain of national and international exchange of police information, intelligence, and risk assessments.

Chief Inspector Pondev has graduated from specialised professional courses by CEPOL and Interpol in countering violent extremism and terrorism, and safety and security management for major international sporting events. At BGP, Chief Inspector Pondev works in the domains of international cooperation, police investigations, and prevention of sports hooliganism. In 2007, he graduated from the Academy of Bulgaria's Ministry of the Interior. Chief Inspector Pondev was born in Sofia, Bulgaria.

What other European projects does BGP participate in?

As a major law-enforcement body in Bulgaria, BGP is actively engaged in the implementation of international projects, EU-funded ones in particular, as both the leading organisation and as a partner. Under the EU's Internal Security Fund, BGP works on a project for reducing the levels of corruption among the patrol and traffic police through the introduction of video surveillance in the police vehicles. We are also engaged in a project on capacity building for the police to counter illegal waste trafficking. Under the Norwegian Financial Mechanism's Home Affairs Programme, BGP implements a project on improving the capacity of the police and forensic activities, dealing with material evidence in pre-trial investigation. We have three more projects in our Home Affairs Programme's portfolio: improving the efficiency of the police in the field of domestic and gender-based violence; improving the coordination and dialogue between the police and the Roma communities; and corruption prevention in general – the latter project is led by the Home Security Directorate and BGP is a partner.

Notably, we are thrilled to share with you about a brand new investment project, entitled "Improving the Quality and Sustainability of the Security Services". The project has been included in Bulgaria's Recovery and Resilience Plan and is managed by the Interior Ministry's Directorate on Information and Communication Systems and the National Police Directorate.

The Bulgarian National Police General Directorate (BGP) is a national specialised operative, security and control structure for prevention, investigation and detection of crimes and for the protection of public order.

BGP's officers collect, process and utilise crime-related data; collaborate with other state institutions and organisations; and partner with the civil society sector. Notably, BGP organises, coordinates and controls the activity of the Interior Ministry's regional directorates on prevention, detection and investigation of crimes and anti-social acts.

Stay Tuned to Newsletter's Issue #6!

Our next newsletter will focus on exciting project updates and news from our consortium members. We will also continue presenting CounteR's partners through interviews and editorials, thus highlighting project achievements both on the technical implementation side, and the value of CounteR's scientific potential. We will also continue showcasing CounteR's scientific publications.

CounteR Consortium

ASSIST Software SRL, Romania

ETICAS Research and Consulting, Spain

INSIKT Intelligence, Spain

Elliniki Etairia Tilepoikinonion kai Tilematikon Efarmogon A.E.-Forthnet S.A., Greece

Imagga Technologies LtD., Bulgaria

Ministério da Justiça, Portugal

ICON Studios Ltd., Malta

Hochschule für den öffentlichen Dienst in Bayern, Germany

Consorzio Interuniversitario Nazionale per l'Informatica, Italy

Institut national de Recherche en Informatique et Automatique, France

State Police Latvia, Latvia

Eötvös Loránd University, Hungary

Università Cattolica del Sacro Cuore Academia, Italy

Serviciul de Protectie si Paza, Romania

Malta Information Technology Law Association, Malta

European Institute Foundation, Bulgaria

National Police General Directorate at the Ministry of Interior of the Republic of Bulgaria

Association les Militants du Savoir, France

Ministère de l'intérieur/ direction générale de la sécurité intérieure, France

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