

HPC Serbia's engagement with industry partners

Marija Mitrović Dankulov, Dušan Vudragović, Antun Balaž

NCC Serbia, Institute of Physics Belgrade, University of Belgrade



Serbia ICT Sector

- **Export:** €4.13 billion in 2024
- **Ecosystem:** more than 600 startups
- **Innovation development:** predominantly funded through Serbia Innovation Fund
- Horizon 2020, Horizon Europe, Digital Europe: relatively low participation
- NCC for HPC, 2 EDIH

NCC Serbia engagement with industry

- **Proof of concept(s)** with SMEs and startups
- **Consulting services:** hardware, software, development, project applications, resources
- **Advertisement of training activities** through collaboration with other SMEs
- www.hpc.rs

HPC resources: Euro HPC JU



EuroHPC
Joint Undertaking

https://eurohpc-ju.europa.eu/access-our-supercomputers_en

CALL STATUS: OPEN

EuroHPC JU Call for Proposals for Benchmark Access

The Call for Proposals for EuroHPC JU Benchmark Access Mode is a continuously open call, with a maximum time-to-resources-access (start-date) of two weeks after the date of submission.

CALL STATUS: OPEN

EuroHPC JU Call for Proposals for Regular Access Mode

Researchers from academia, research institutes, public authorities, and industry established or located in an EU Member State or in a country associated with Horizon 2020 can apply and access the EuroHPC pre-exascale and petascale supercomputers.

CALL STATUS: OPEN

EuroHPC JU Call for Proposals for Development Access

The Call for Proposal for EuroHPC JU Development Access Mode is a continuously open call, with a maximum time-to-resources-access (start-date) of two weeks after the date of submission.

CALL STATUS: OPEN

EuroHPC JU Call for Proposals for Extreme Scale Access Mode

The call is open to all fields of science, industry and public sector justifying the need for and the capacity to use extremely large allocations in terms of compute time, data storage and support resources.

HPC resources: AI Factories

https://eurohpc-ju.europa.eu/ai-factories/ai-factories-access-calls_en

AI for Industrial Innovation

The AI Factories Industrial Innovation track includes three access mode, targeting different use cases and compute needs.

1. **Playground access**, providing limited resources for entry-level users
2. **Fast Lane access**, for users already familiar with HPC requiring up to 50,000 GPU hours
3. **Large Scale access**, catering to AI models and applications requiring more than 50,000 GPU hours

The Industrial Innovation Access modes are open and free-of-charge to AI SMEs (including startups) for innovation purposes. Other industrial applications can benefit from pay-per-use commercial access.

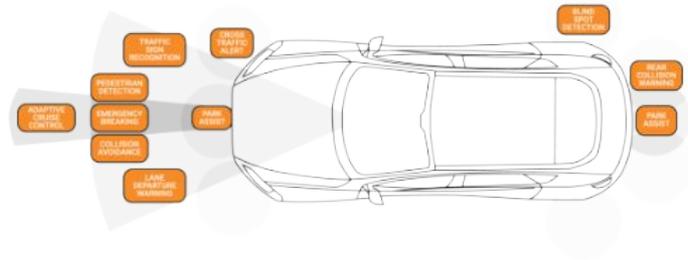
[Apply for Access >](#)



AI generated image

Proof of concept: SYRMIA

SYRMIA



ETAS

VECTOR 



SME Serbia

Hardware and software solutions for automotive industry

PoC funding: Serbia Innovation Fund, Collaborative Grant Scheme, CG50301

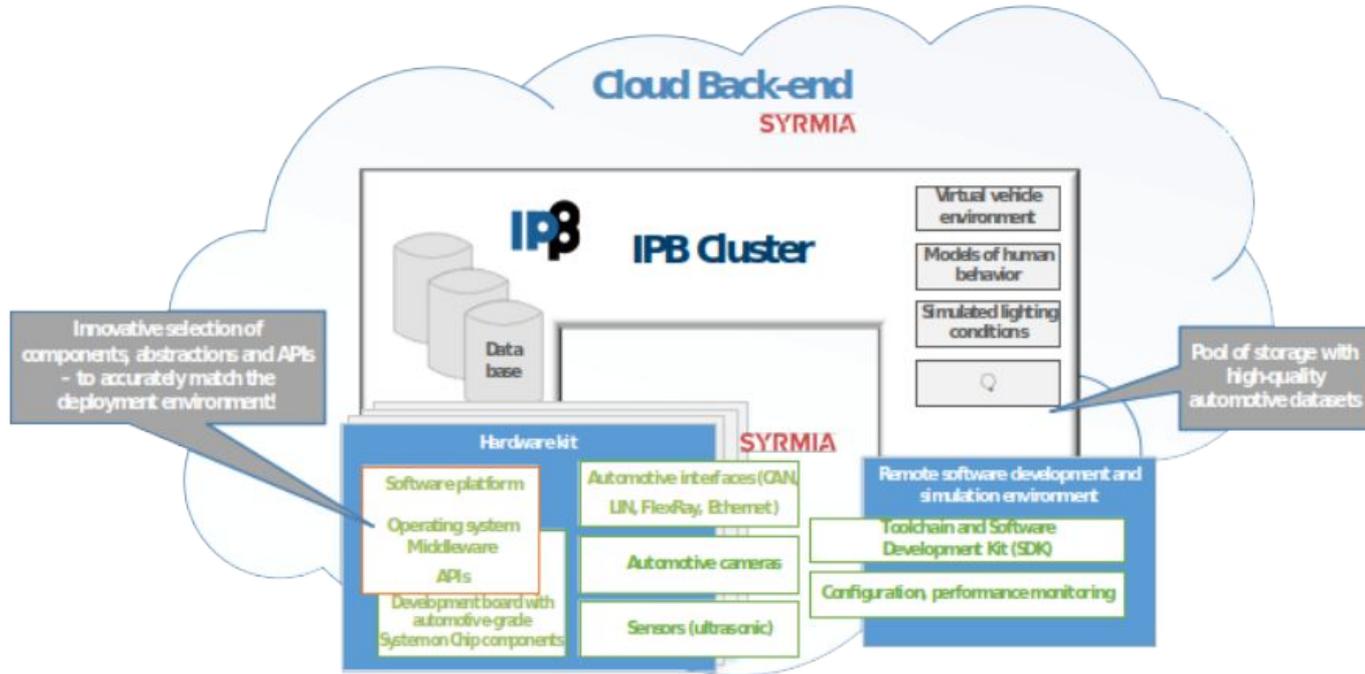
Standards in automotive industry: testing in real-time conditions



Autonomous driving software development:

1. AI-based learning
2. Strongly data dependent
3. Platform dependent
4. Expensive development and testing equipment

Our solution: READ platform



On our platform testing is done on real physical hardware and on realistic noisy data that include equipment failures and adverse environments

READ: autonomous driving data sets

- We use physics based modeling approach to introduce haze, fog, rain, thermal and electric noise, with different intensity into realistic images and videos
- We provide these data sets to developers
- We provide algorithms for introducing noise into data sets used by developers

Haze modeling

- Haze is relatively simple for modeling; no correlation between images
- Atmospheric Scattering Model

$$H(x) = t(x)I(x) + L(1 - t(x))$$

$$t(x) = e^{-\beta d(x)}$$

- β is a scattering coefficient
- $d(x)$ is depth estimated by Monodepth2 algorithm
- KITTI open access data set



Rain modeling

- Rain modeling is more complicated than haze; still rain scene between two images is not correlated

$$O(x) = I(x)(1 - R(x) - A(x)) + R(x) + L_0A(x)$$

$$R(x) = R_{pattern}(x)e^{-\alpha d(x)} \quad \text{rain layer}$$

$$A(x) = 1 - e^{-\beta d(x)} \quad \text{fog layer}$$

α controls rain streak intensity

β controls fog intensity



Object detection: fog



Semantic segmentation: haze



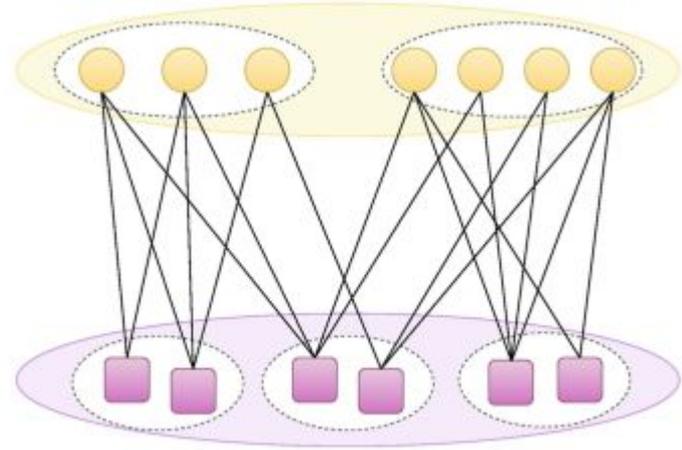
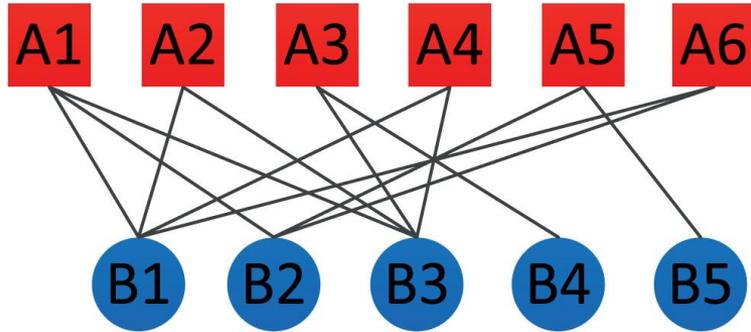
PoC recommendation algorithm: 60seconds LTD, Ujedinjeno Kraljevstvo



- double auction between buyers and sellers
- discount prediction for sellers that maximizes profit
- recommendation algorithm for buyers
- **PoC Funding:** company

Stochastic block model

Bipartite network of buyers and product categories



Task: determine the groups of buyers and product categories, and determine linking probabilities between different groups

PoC: Large Language Models for information extraction

Reputeo doo



Potpuna pretraga

DEV TEST 06.02.2025. > Gabor Mate | Serbia

100 Ukupan sentiment
Na osnovu primenjenih filtera

Kreirano 06/02/2025 Trenutni status Završeno

Sentiment Samo linkovi Prilagodi kolone

Sentiment Sve Izdavač Sve Država Sve Društvene mreže Vesti Pretplata Resetuj filtere

Naslov	Rezime	Ključne reči	Izvor	Zemlja	Datum ↓
Proглаšene najbolje društvene odgovorne kampanje u Srbiji - «Kampanje Sa Svrhom 2024» - Magazin Biznis	Na festivalu "Kampanje sa svrhom 2024" nagradu je dobila kampanja "Dr Gabor Mate na Balkanu" Novak Đoković Fondacije i agencije Smart Vision.	 Festival Kampanje sa svrhom 2024 Tijana Adamov Ignjatović Društveno odgovorne kampanje Kategorije EKO SOCIAL GENDER Nagrade za kampanje	https://magazinbiznis.rs	Srbija	2024-11-21
Proглаšene „Kampanje sa ciljem 2024“ - Nedeljnik	Dr Gabor Mate je posetio Balkan u okviru kampanje „Dr Gabor Mate na Balkanu“ koju je organizovala Novak Đoković Fondacija.	 Kampanje sa svrhom 2024 Međunarodni dan deteta Društveno odgovorne kampanje Rodna ravnopravnost Ekološke kampanje	https://www.nedeljnik.rs	Srbija	2024-11-20
Taraba na ramen je najpopularniji model na modnoj sceni	Članak raspravlja o kontroverznom pojavljivanju Bianca Censori na dodeli Grammy nagrada, gde je njen skoro nepostojeći outfit izazvao burne reakcije. Analiza seže dublje, uzimajući u obzir... [Prikaži više...]	 Bianca Censori Gremi nagrade kontroverzno pojavljivanje društvene mreže Kanye West	https://buro247.rs	Srbija	2024-10-06
Jelena Đoković za Ona.rs o važnosti roditeljskog autoriteta: „Pustite dete da plače, to je važno za razvoj“	Gabor Mate, poznati psiholog, je bio istaknut u radu Novak Đoković Fondacije 2023. godine, gde je njegov mentor, dr Gordan Njufeld, bio pozvan da govori o razvoju dece. Mate i Njufeld ističu... [Prikaži više...]	 Porodica Roditeljstvo Psihologija Trauma Obrazovanje	https://ona.telegraf.rs	Srbija	2024-09-15
„Još odolevamo trendovima koje Zapad nameće“: Jelena Đoković o porodičnim vrednostima	Gabor Mate, čiji je mentor dr Gordan Njufeld, bio je prošle godine gost Fondacije Novaka Đokovića i ostavio dubok utisak na publiku širom regiona.	 Jelena Đoković Dr Gordan Neufeld Radionica za roditelje Porodične vrednosti Dečija psihologija	https://m1info.rs	Srbija	2024-09-12

THANK YOU

contact: mitrovic@ipb.ac.rs