ectri

af p gef r

The NTUA Road Safety Observatory

www.nrso.ntua.gr

George Yannis

Professor

Together with:
all the great nrso team

Presentation outline

1. The NTUA Road Safety Observatory (10)
2. Cooperations and Partners (5)
3. NRSO Website and Systems (4)
4. Road Safety Research Areas (6)
5. Road Safety Research Perspectives (4)

NTUA Road Safety Observatory

A Center of Research and Innovation Excellence

NTUA Road Safety Observatory

- A Center of Research and Innovation Excellence on Road Safety, with global recognition [ranked: 2nd in Europe and 6th worldwide (AAP 2018)]
- within the Department of Transportation Planning and Engineering [ranked: 9th in Europe and 39th worldwide (ShanghaiRanking's 2017), scientific citations: 3rd in Europe and 19th worldwide (Pulse 2017)]
- of the School of Civil Engineering [ranked: 11th in Europe and 42nd worldwide (QS 2018)]
- of the National Technical University of Athens [the oldest (since 1837) and most prestigious Greek Technical University]

NRSO - Mission

The Mission of the NTUA Road Safety Observatory (www.nrso.ntua.gr) is:

- to support the Greek and the International Road Safety Community with current key road safety knowledge and data
  - gathered, analysed and organised within the research activities of the Department of Transportation Planning and Engineering of the School of Civil Engineering of the National Technical University of Athens
- as well as within co-operations with various national and international road safety organisations

NRSO - Vision

The Vision of the NTUA Road Safety Observatory is:

- to contribute to the significant reduction of the number of road accidents and of the related casualties in Greece, in Europe and worldwide
- through the scientific support of evidence based decision making for the necessary road safety policies, programmes and measures

NRSO - The People

- Internationally recognized Professors
- 6 Senior Transportation Engineers (4 PostDoc)
- 6 Transportation Engineers - PhD Candidates
- 6 Transportation Engineers - Research Assistants
- 2 Information Systems Engineers
- 2 Administrative Assistants

with high level scientific expertise in:

- traffic safety, transport and traffic planning and engineering
- data science and advanced statistical data analysis
- intelligent transportation systems and automation

NRSO – Our Fundamental Research Principles

Excellence

- Advanced and innovative technology concepts

Impact

- Research with significant impact to society and economy

Implementation

- State-of-the-art organisation and management structures

NRSO - The Value of the Researcher

We are committed to the Value of the Researcher, which:

- starts with carrying out excellent research,
- is tested by publishing in high-level peer review journals and
- makes the difference when awarded project grants through highly competitive procedures

NRSO - Research Performance

- More than 100 road safety research projects since early '90s
  - 40 Greek
  - 60 International

- 75 of these research projects were assigned through highly competitive (national or international) procedures
  - Horizon 2020: 9 projects out of 39 proposals submitted

NRSO - Scientific Publications

- More than 500 road safety publications:
  - in scientific Journals (more than 150)
  - in scientific conference proceedings (more than 350)
  - with more than 3.000 citations
  - i10-index: google scholar: 83
  - h-index: google scholar: 29, scopus: 22

- More than 350 presentations in scientific conferences
  - more than 250 international and more than 100 national
  - after invitation in more than 150 of them

Available on-line at: www.nrso.ntua.gr/geyannis

NRSO - Road Safety PhDs

- Dimitris Tselentis, 2018
  - "Benchmarking Driving Efficiency using Data Science Techniques applied on Large-Scale Smartphone Data"
- Dimosthenis Pavlou, 2016
  - "Traffic and safety behaviour of drivers with neurological diseases affecting cognitive functions"
- Akis Theofilatos, 2015
  - "An advanced multi-faceted statistical analysis of accident probability and severity exploiting high resolution traffic and weather data"
- Panagiotis Papantoniou 2015
  - "Risk factors, driver behaviour and accident probability - The case of distracted driving"
- Eleonora Papadimitriou 2010
  - "Pedestrian behaviour and safety models in urban road networks"
- 9 more PhDs are in progress

NRSO - PhD & PostDoc Alumni Careers

Our PhD and PostDoc Alumni Engineers are pursuing excellent academic, engineering and consulting careers worldwide:

- Technical University of Munich (TUM)
- Technical University of Delft (TUD)
- Ecole Nationale des Ponts et Chaussées (ENPC)
- Ecole Polytechnique Fédérale de Lausanne (EPFL)
- Loughborough University (UL)
- National Technical University of Athens (NTUA)
- Ernst & Young (EY)
- Salfo Engineering International (Salfo)

Cooperations and Partners

Our Cooperations - Greece

Our Cooperations - Europe

Our Cooperations - Worldwide

Our Partners - Universities

Our Partners - Research Institutes

NRSO Website and Systems

The NRSO website (1/2)

An international reference website - information system with state-of-the art road safety data and knowledge

www.nrso.ntua.gr

- more than 3.000 visits per month
- 100+ electronic newsletters since 2007
- tens of tweets and social media posts annually
- network of more than 3.500+ road safety experts in Greece (800+) and worldwide (2.700+)

The NRSO website (2/2)

A dynamic website with a wealth of information

www.nrso.ntua.gr

- since 2004 with more than 1.300 items
- all important road safety News in Greece, in Europe and globally
- new Reports covering all modern road safety issues
- latest available road safety Data for Greece and the EU
- exhaustive list of road safety Conferences in Greece and globally
- links to dozens of road safety Resources globally

NRSO Data and Knowledge Systems

Databases

- SANTRA - Greek Road Accident Database with disaggregated data (1985 - 2017, 1,2 million recordings)
- CARE - European Road Accident Database with disaggregated data (1991 - 2017, 36 million recordings)
- IRTAD - International Road Accident Database with aggregated data
- Databases of International Organisations (WHO, IRF, ERF, UITP)
- Databases with Aggregated Data (Vehicle fleet, veh-km, driver behavior, etc.

Knowledge Systems

- Digital Road Safety Library > 5.000 key Road Safety Reports
- International Bibliography databases (scopus, science direct)
- Analysis tools (traffic, simulation, statistics)

NRSO Research Infrastructure

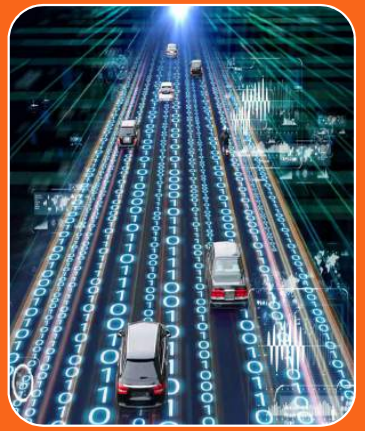
- Driving Simulator (Foerst ¼ cab, moving base) for driver behavior experiments
- Unmanned Aerial Vehicles (Drones) for traffic monitoring
- Smartphone Telematics application (powered by OSeven) for driver behaviour monitoring
- On-Board Diagnostics Devices (OBD) for driver behavior monitoring
- Cameras and other devices for traffic counts, speed monitoring, position monitoring (GPS)

Road Safety Research Areas

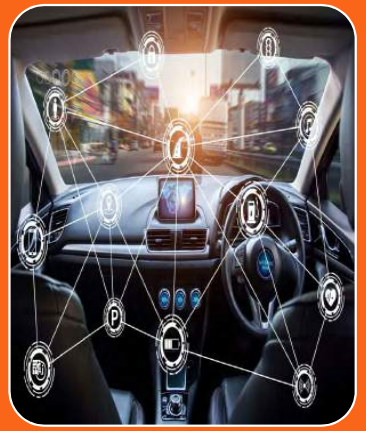
The Road Safety Research Areas

Road Safety Data & Knowledge Systems

Driver Safety Behaviour



Road Infrastructure Safety



Driver Behaviour Telematics

Traffic Automation and Safety

Road Safety Systems

- Erso+ - The European Road Safety Observatory
- SaferAfrica - The African Road Safety Observatory
- SafetyCube - European Road Safety Decision Support System
- SafeFITS - Global Road Safety Model
- Pract - The CEDR Road Safety APM and CMF Repository
- BeOpen - Open science in road safety
- Nrso - The NTUA Road Safety Observatory

Driver Safety Behaviour

- **Esra** - Road safety attitudes in Europe
- **SafeCulture** - Road safety culture in Greece and in Norway
- **OSeven** - Monitoring driver behaviour through mobile phones
- **Velivr** - Cycling under the influence of alcohol and drugs
- **Skillful** - Safety skills of future transportation professionals
- **SafeBehave** - Actions to improve drivers' safety behavior

Road Infrastructure Safety

- i-safemodels - Modelling crash modification factors globally
- EibCba - Economic analysis of road infrastructure safety projects
- Pract - The CEDR Road Safety APM and CMF Repository
- WeatherSafe - Predicting road accidents with real time data

Driver Behaviour Telematics

- i-Dreams - Driver-vehicle-environment interactions and safety tolerance
- BeSmart - Smartphone applications for driver safety behaviour support
- Sesame - Smartphone exploitation for event spatial analysis & mapping
- OSeven - Data science techniques for benchmarking driving efficiency

Traffic Automation and Safety

- Levitate - Societal impacts of connected and automated vehicles
- Drive2theFuture - Driver needs and behaviour in automated traffic

Road Safety Research Perspectives

Overall Key Road Safety Remarks

- Speed is highly misunderstood by all
- Vulnerable road users are not accommodated
- We spend too much without effectiveness monitoring
- Unrealistic expectations of technology (especially of automated vehicles)
- Too much data, too little usage
- Need for more road safety science and budgets

Road Safety Policy Perspectives

- Focus on the key road accident risk factors:
  - Speed, Speed and Speed
  - Drink and Drive
  - Distracted Driving
  - Not use of seat belt and helmet
- Adapt urban mobility management to accommodate and balance current and future mobility and safety needs of the vulnerable road users (pedestrians, cyclists, motorcyclists): Reduce Speed everywhere.
- Develop strong road safety culture of the Authorities and all Stakeholders (safe system approach) and the whole population.

Road Safety Technology Perspectives

- Technology can be the new road safety driver, through:
  - Public private partnerships
  - Clear problem analyses (well defined objectives)
  - Systematic effectiveness monitoring
- Great need for:
  - more data and knowledge
  - better exploitation of current and future data
  - broader geographical coverage
- Data focus on:
  - more accurate road accident data (LMIC Counties)
  - exposure data and performance indicators
  - measures and policies effectiveness evaluation

Road Safety Technology Perspectives

- Digitalization opens great new data possibilities for:
  - road user support and guidance
  - evidence based public and private road safety decision making at all levels

- New great potential for seamless data driven procedures from safety problems identification to selection and implementation of optimal solutions

- Exploitation of the high safety potential of vehicle and traffic automation, with focused research on the transition phase and the vulnerable road users

ectri

af p gef r

The NTUA Road Safety Observatory

www.nrso.ntua.gr

George Yannis

Professor

Together with:
all the great nrso team