UNIVERSITY:

Public University of Navarre (UPNA)

WIT AREA:

☒ **Automotive, Mechatronics and Advance Manufacture**

☐ **Health**

☐ **Energy**

☐ **IA**

WIT PROGRAMME´S RESEARCH LINE NAME (choose one among the following):

Eco-efficient Mobility Management in Sustainable Urban Transport

Automotive, mechatronics and Advanced manufacture	Health	Energy
• RF/Microwave devices for satellite communications by 3D printing. • High capacity communications in THz • Development and manufacturing of multi-source energy Harvesting systems. • Smart materials, composite materials and nanomaterials in industry 4.0 • Additive manufacturing and 3D printing for the automotive industry • Development and advanced manufacturing of sensors • Eco-efficient Mobility Management in Sustainable Urban Transport. • Development and advanced manufacturing of sensors for continuous measurement of water quality in rivers and urban sanitation networks • Advanced fuel cell manufacturing • Magnetic sensors for automotive and mechatronic applications • Vehicle lightening and functional interior development	• Hematology. Advanced therapies and diagnostic innovation • Pediatric oncology • Ophthalmology. Neurosciences and sense organs • Pharmacy. Biological Applicability Molecules • Preventive medicine. • Palliative care. • Cardiology. • Gene therapy. • Hepatology. • Immunology / immunotherapy • High capacity communications in THz.	• New sources of renewable energy. • Network integration. • Intelligent electric micro-networks. • Power electronics. • Development of advanced materials and technologies for energy production. • Valorization of natural resources and waste.
Artificial intelligence applied to each of the previous research lines		
• Real-time data processing. • Image Processing. • Optimization and control of industrial processes.	• Spatial Statistical Problems. • Other applications as a service in health, energy, etcetera.	

DOCTORAL PROGRAMME:

1) Communications Technologies, Bioengineering, and Renewable Energies at UPNA (TECOMBER)

2) Sciences and Industrial Technologies at UPNA

COMPLETE DESCRIPTION OF THE LINE

This line focuses its interest on the interdisciplinary study of the urban logistics of merchandises and people mobility, considering the option of using Low Environmental Impact Vehicles- LEIV. Moreover, this line involves researchers of assorted scientific areas such as Industrial Engineering, Computer Science, Operations Research, Business, Economics, and others, that make use of Optimization and Simulation algorithms in Transport Analytics, with the following aspects:

1) **Analysis of big data related to mobility and logistics**.
2) **Study of eco-efficient urban distribution policies of merchandises**. **Use of LEIV vehicles and non-standard distribution systems (automated parcel lockers, crowd shipping, …)**
3) **Algorithms design to make quick logistic decisions (agile optimization).**
4) **Design of criteria of environmental impact minimization and road safety maximization to build urban transportation networks for people mobility**.
5) **Design of environmental costs** (willingness to pay, double hurdle, direct estimation, etc) in order to build mobility policies for people and merchandises.

RESEARCH GROUP NAME:

DECYL (Datos, Estadística, Calidad y Logística)

https://academicos.unavarra.es/CawDOS/jsf/seleccionGrupos/seleccionGrupos.jsf

RESEARCH LINE COORDINATOR:

- Last and first name; link to the "Portal of scientific production":
  Faulin-Fajardo, Francisco-Javier
  https://academicos.unavarra.es/CawDOS/jsf/seleccionPersonalPalabraClave/seleccionPersonal.jsf
- Department: Statistics, Computer Science and Mathematics
- Email: javier.faulin@unavarra.es
- Telephone number: 34-948169211

MEMBERS OF THE LINE RESEARCH:

Fco. Javier Faulin Fajardo, CU, Instituto de Smart Cities, UPNA
Jesús M. Pintor Borobia, TU, Instituto de Smart Cities, UPNA
Juan Ignacio Latorre Biel, TU, Instituto de Smart Cities, UPNA
Bartosz Tadeusz Sawik, Visiting Professor, UPNA
Adrián Serrano Hernández, CDi, Instituto de Smart Cities, UPNA

ANOTHER RESEARCH LINES OF THE GROUP: list of them

(This list is not exhaustive, but describes the research lines which are closer to the one here depicted)

- Surveys Design and Analysis.
- Simulation and Simulation-Based Optimization. Applications in Health, Industry, and Services.
- Quantitative Methods for Decision Making in Health, Energy, and Production.

- Entities involved in research lines and contact person:

✓ Academic entities:

1. Department of Computer Science- Open University of Calalonia- Barcelona. SPAIN
2. Instituto Europeo de Formación y Acreditación Aeronáutica (EIATA). University Rey Juan Carlos. Madrid. SPAIN.
3. Department of Production and Logistics. University of Natural Resources and Social Sciences. Vienna. AUSTRIA
4. Faculté des Sciences Économiques. Université de Rennes 1- Rennes. FRANCE
5. Department of Civil and Environmental Engineering. Portland State University. Portland. OR. USA

✓ Industrial entities:

1. DRONEXSERVICES S.L. Madrid. SPAIN
2. BAOBAB SOLUCIONES S.L.. Madrid. SPAIN.
3. LOGYCA-CLI. Bogotá. COLOMBIA.
4. KAIZTEN ANALYTICS S.L Santa Cruz de Tenerife. SPAIN

- Joint supervision of doctoral thesis with international universities or non-academic institutions:

The PhD thesis to be developed inside this research line could be co-advised with researchers of the following institutions:

1. Department of Applied Statistics and Operations Research-- Technical University of Valencia- Alcoy. SPAIN
   - Researchers: Prof. Ángel A. Juan Pérez and Prof. Javier Panadero (UPC, Barcelona, SPAIN)
   - Contribution: Algorithms design for agile vehicles routing optimization
2. Instituto Europeo de Formación y Acreditación Aeronáutica (EIATA). University Rey Juan Carlos. Madrid. SPAIN.
   - Researchers: Prof. Luis Cadarso
   - Contribution: Use of UAVs for logistic distribution and air vehicles routes optimization.
3. Department of Production and Logistics. University of Natural Resources and Social Sciences. Vienna. AUSTRIA
   - Researchers: Prof. Manfred Gronalt and Prof. Patrick Hirsch
   - Contribution: Green logistics and merchandises distribution using LEIV vehicles
4. Department of Operations Research and Information Technology. Department of Applied Computer Science. AGH University. Krakow. POLAND
   - Researchers: Prof. Bartosz Sawik
   - Contribution: Last mile distribution in urban areas with environmental criteria.
5. Faculté des Sciences Économiques. Université de Rennes 1- Rennes. FRANCE
   - Researchers: Prof. Laurent Denant-Boémont and Prof. Sabrina Hammiche.
   - Contribution: Environmental costs estimation in road mobility.
6. Department of Civil and Environmental Engineering. Portland State University. Portland. OR. USA
   - Researchers: Prof. Miguel Figliozzi
   - Contribution: Optimization of urban routes of LEIV vehicles.

- Brief group overview

DECYL Group was created in 1994 inside the research area Statistics and Operations Research at the Public University of Navarre, and includes 19 researchers who work in the following research lines: 1) Simulation and Optimization models 2) Logistics and Transportation 3) Probability and Stochastic Processes 4) Data Mining 5) Algebraic Statistics. This group has published in the last five years more than 100 papers in international journals, and more than 50 contributions in proceedings of international conferences. Its members take part in different research projects funded by different institutions (Spanish Government, CYTED, Spanish Regions Governments, European Commission, US Department of Transportation, among others). Moreover, this group has collaborated with important national and international companies by means of research grants.

- Link of the group to the "Portal of scientific production"

https://academicos.unavarra.es/CawDOS/jsf/seleccionGrupos/seleccionGrupos.jsf

- Pictures, links… to academic or industrial partners (if any)

1. Department of Applied Statistics and Operations Research- Technical University of Valencia- Alcoy. SPAIN
   - Researchers: Prof. Ángel A. Juan Pérez and Prof. Javier Panadero (UPC, Barcelona, SPAIN)
   - https://icso.webs.upv.es/

2. Instituto Europeo de Formación y Acreditación Aeronáutica (EIATA). University Rey Juan Carlos. Madrid. SPAIN.
   - Researchers: Prof. Luis Cadarso
   - Contribution: Use of UAVs for logistic distribution and air vehicles routes optimization.
   - https://gestion2.urjc.es/pdi/ver/luis.cadarso

3. Department of Production and Logistics. University of Natural Resources and Social Sciences. Vienna. AUSTRIA
   - Researchers: Prof. Manfred Gronalt and Prof. Patrick Hirsch
   - Contribution: Green logistics and merchandises distribution using LEIV vehicles
   - https://forschung.boku.ac.at/fis/suchen.person_uebersicht?id_in=5514&menue_id_in=101&sprache_in=en

4. Department of Operations Research and Information Technology. Department of Applied Computer Science. AGH University. Krakow. POLAND
   - Researchers: Prof. Bartosz Sawik
   - Contribution: Last mile distribution in urban areas with environmental criteria.
   - http://wz.zarz.agh.edu.pl/English/Faculty/Faculty.asp?ID=Organisational_Units

5. Faculté des Sciences Économiques. Université de Rennes 1- Rennes. FRANCE
   - Researchers: Prof. Laurent Denant-Boémont and Prof. Sabrina Hammiche.
   - Contribution: Environmental costs estimation in road mobility.
   - https://eco.univ-rennes1.fr/interlocuteurs/laurent-denant-boemont
   - https://eco.univ-rennes1.fr/interlocuteurs/sabrina-hammiche

6. Department of Civil and Environmental Engineering. Portland State University. Portland. OR. USA
   - Researchers: Prof. Miguel Figliozzi
   - Contribution: Optimization of urban routes of LEIV vehicles.
   - https://www.pdx.edu/profile/miguel-figliozzi

ACADEMIC REQUIREMENTS:

A Master degree in Industrial Engineering is highly recommended but it is not compulsory.

ADDITIONAL REQUIREMENTS:

Good computational skills are greatly desired.

Gobierno de Navarra | Nafarroako Gobernua
Departamento de Universidad, | Unibertsitateko, Berrikuntzako eta
Innovación y Transformación Digital | Eraldaketa Digitaleko Departamentua