



Εθνικό και Καποδιστριακό
Πανεπιστήμιο Αθηνών
National and Kapodistrian
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IoT & Big Data for Food Safety



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Our Profile

National Kapodistrian University of Athens (NKUA, www.uoa.gr)

- Dept. Informatics and Telecommunications (DIT, di.uoa.gr)
- Software Centric & Autonomic Networking
 - Staff: 20 **researchers, engineers and administrative personnel**
 - Participation in more than 18 **EU funded projects** (7 coordinated by Scanlab)
 - More than 20 Industrial contracts



- 5 World Patents
- More than 500 **publications**
- More than 4000 citations
- Mobile Communications, IoT, AI/ML, Data Analytics, New Generation Internet Applications, Smart Farming, Smart Cities/Ports
- Support for BSc/MSc/PhD ~ 15 per Year



EU funded projects



IoT and Data Analytics in the food safety and traceability

- Participation in 3 FI-WARE use case projects fostering applications from farm to fork, traceability and food safety
 - Phase I - Smart AgriFood: Smart Food and Agribusiness: Future Internet for Safe and Healthy Food from Farm to Fork,
 - CONDIS SUPERMERCATS SA – CONDIS: food traceability and metadata for food quality and customer awareness
 - Phase II – Finspace: Future Internet Business Collaboration Networks in Agri-Food, Transport and Logistics,
 - Phase III – FRACTALS: Future Internet Enabled Agricultural & Food Applications.
- IoT platform for sensor data aggregation
- Data analytics for sensor data, environmental data, situational data etc.

Food safety from Farm to Fork

- Smart AgriFood Management application development comprising:
 - Several wireless sensor networks, deployed in different Greenhouses in Crete, as well as Athens wider area,
 - Smart Farm Management System, capable of IoT data acquisition, aggregation, pre-processing and brokering,
 - Data Analytics and Advisory (expert system) providing smart feedback, alerts, notifications as well as actuation commands back to the greenhouses.
- Smart Supply Chain Management & Quality Control platform:
 - Traceability of Food products, monitoring of quality control metadata
 - Data analytics from various sources to assess impact on quality of Food products through the supply chain.
 - Notifications and alerts for food safety and quality indicators

From Barcodes to Food quality awareness

- Tracing Food production and Shipments with IoT - Improved overview and visibility of food product quality indicators and stock in transit (conditions during transportation- e.g., dust and dirt particles, temperature and other environmental conditions that may impact food safety).
- Food quality/safety alerts from farm to storage and transportation phases
- Get notified on deviations and circumstances on the supply chain and their impact on food quality
- More effective and cost optimized deviation management
- Improved end-to-end collaborative supply chain planning for food quality and safety
- Provision of food quality indicators at the consumer



SafeFood-as-a-Service for farm to fork food safety

- The platform is collecting relevant data of a food product from different sources, such as IoT, satellite environmental data, laboratory analysis, social media streams etc and from all phases of product supply chain. The aggregated data are analyzed and provided to the quality managers.
- The platform performs big data analytics, creates an early warning system and is able to predict critical circumstances (Artificial Intelligence/Machine Learning). It empowers quality managers to react more quickly in cases of critical issues.
 - Data analysis for food storage provides a history of infestations and their entry points, along with IoT sensors that provide real-time information on the presence of such infestations allowing storage facilities to protect their environments and improve storage conditions.
- The usage of information provided by the SafeFoodS App allows notifications and warning of all involved actors along the supply chain.
- High Consumer satisfaction from food quality awareness-metadata aggregation

IoT in smart farming for quality assurance

Sensors to monitor soil parameters, temperature, CO₂, PH etc.



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