

Curriculum vitae

PERSONAL INFORMATION



Nikoloudakis Yannis

 Kritovoulidou 10, 74100 Rethimno (Greece)

 2831024204  (+30)6977232927

 nikoloudakis@pasiphae.eu

 gr.linkedin.com/in/gnikoloudakis

 [Google Hangout](#) giannis.nikoloudakis

EDUCATION AND TRAINING

23/01/2017–Present

PhD Candidate in Computer Science

EQF level 8

University of the Aegean, Department of Information & Communication Systems Engineering, Karlovassi, Samos (Greece)

Dissertation Title: "Dynamic Network Resource Management & Service Adaptation in Fog-Based environments for Real Time Media Delivery with Maximum Possible Quality of Experience".

Supervisor: Dr Charalambos Skianis

01/09/2014–07/02/2017

MSc in Informatics and Multimedia

EQF level 7

Technological and Educational Institute of Crete, Department of Informatics Engineering, Iraklion - Crete (Greece)

Thesis title : A cloud-Based Emergency System for Smart Enhanced Living Environments

Supervisor: Dr Evangelos Pallis

01/09/2005–30/06/2010

Bachelor's Degree in Informatics Engineering

EQF level 6

Technological and Educational Institute of Crete, Department of Informatics Engineering, Iraklion - Crete (Greece)

Thesis title: A smart watering system with remote control features

Supervisor: Dr Spyridon Panagiotakis

WORK EXPERIENCE

01/07/2018–Present

Research Associate

Technological and Educational Institute of Crete, Pasiphae Lab, Department of Informatics Engineering, Heraklion (Greece)

SMILE: SMart mobilLity at the European land borders (H2020-SEC-2016-2017-1, 740931)

01/12/2017–Present

Research Associate

Technological and Educational Institute of Crete, Pasiphae Lab, Department of Informatics Engineering, Heraklion (Greece)

FORTIKA: Cyber Security Accelerator for trusted SMEs IT Ecosystems (H2020-DS-SC7-2016,740690)

09/11/2016–Present

Developer

Technological and Educational Institute of Crete, Department of Agriculture, Iraklion - Crete (Greece)

Pilot development, operation and evaluation of a combined management system of organic residues for the municipality of Ilioupolis

- 20/09/2016–Present **Research Associate**
Technological and Educational Institute of Crete, Pasiphae Lab, Department of Informatics Engineering, Iraklion - Crete (Greece)
nExt generation eMergencY commuNicatiOnS (EMYNOS - H2020-DRS-19-2014, 653762)
- 01/01/2015–Present **Research and development**
Technological and Educational Institute of Crete, Pasiphae Lab, Department of Informatics Engineering, Iraklion - Crete (Greece)
- 01/01/2014–31/12/2015 **Teaching associate professional**
Technological and Educational Institute of Crete, Department of Informatics Engineering, Iraklion - Crete (Greece)
- 01/01/2009–01/07/2014 **Network Engineer**
Anysma, Rethimno - Crete (Greece)
 - Deployment and maintenance supervisor
 - Fiber Optics Expert/Splicer
 - Reasearch Associate
 - Junior Developer
- 01/01/2007–01/02/2008 **Network Engineer**
Qualis Informatics, Rethimno - Crete (Greece)
 - Deployment and maintenance supervisor
 - Research assistant

PERSONAL SKILLS

Mother tongue(s) Greek

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
	Michigan Proficiency (ECPE)				
German	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Job-related skills

- Advanced knowledge in Cloud Computing, Software Defined Networking, Edge Computing, Fog Computing
- Advanced programming skills in C, Python, Go, Java , Javascript , HTML, CSS
- Intermediate programming skills in PHP
- Advanced knowledge in development frameworks (Flask, Django, Beego)
- Basic knowledge in CMS frameworks (Joomla, Wordpress)
- Advanced skills in Databases (Microsoft SQL, MySQL, MongoDB, InfluxDB)
- Advanced skills in Linux Operating Systems (Debian, Arch)
- Intermediate knowledge in Multimedia suites (Photoshop, GIMP, Premiere, Sony Soundforge, Audacity)
- Basic skills in Google Android JDK

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Digital skills - Self-assessment grid

Driving licence AM, A1, A2, A, B1, B

ADDITIONAL INFORMATION

Publications

1. Y. Nikoloudakis, E. Pallis, G. Mastorakis, C. X. Mavromoustakis, C. Skianis, and E. K. Markakis, **“Vulnerability assessment as a service for fog-centric ICT ecosystems: A healthcare use case,”** Peer-to-Peer Netw. Appl., pp. 1–9, Jan. 2019.

abstract: Modern ICT ecosystems such as healthcare environments (hospitals, care-centers etc.), operate in different abstraction layers (cloud, fog, extreme-edge) and comprise large numbers of network entities such as terminals, devices, sensors or even specialized appliances (virtual or physical). It is common in such environments, that several network entities with intermittent connectivity, join and leave the network in an unstructured and unsupervised manner (Wi-Fi access-points, BYOD policies, IoT, etc.). Such devices of frivolous nature, or even trusted devices/terminals, are prone to security vulnerabilities, since they are operated by regular, non-expert users who are not aware of any security aspects whatsoever. To effectively manage and proactively protect such large, complex and multilayered networks, dedicated personnel (system administrators, security specialists etc.) must be employed and specialized appliances must be deployed. On the other hand, modern cyber-warfare has become even more elaborate and insightful. Thus, ICT infrastructures must continuously evolve and adapt to the everchanging cyber-threats, which is a rather cumbersome and expensive task to accomplish. Towards addressing the above-mentioned issues, this paper proposes a cross-layered system, which leverages the Software Defined Networking (SDN) paradigm and the distributed Fog architecture, for network slicing and task offloading to provide dynamic, security-aware Vulnerability-Assessment as a service for large ICT infrastructures. The presented system provides seamless assessment for all existing and newly introduced network entities against all known security vulnerabilities, certifies them through a Common Vulnerability Scoring System (CVSS), classifies them according to the cyber-threat they introduce, and finally assigns them to a connectivity-appropriate VLAN. The presented system was preliminarily evaluated under a controlled-conditions simulation environment.

2. Y. Nikoloudakis et al., **“Edge Caching Architecture for Media Delivery over P2P Networks,”** in 2018 IEEE 23rd International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD), 2018, pp. 1–5.

abstract: Peer to Peer (P2P) systems, have been identified as one of the main contributors to the exponential growth of internet traffic. File sharing applications such as BitTorrent clients, are the most popular among P2P systems and tend to consume great amounts of network resources, stretching infrastructure capabilities to their limits. This causes interdomain links to be overloaded with traffic, created from content traversing the network, which is most of the times redundant. Cloud computing has been an empowering force towards alleviating this issue and many research approaches have been proposed. With cloud orchestration frameworks and Software Defined Networks (SDN) as our empowering technologies, we propose a cross-layered edge-caching mechanism to alleviate content and service providers of link-saturation problems, caused by identical content requested and downloaded by multiple users in the same network vicinity. The proposed mechanism identifies and classifies P2P data-in-transit, caches it locally and successively acts as a peer by sharing it with all other requesting users. This way, redundant traffic in the backhaul link is minimized, since requests for content cached by the mechanism, will be served by the target edge-node and not from the content provider. To validate the performance and overall efficacy of the proposed mechanism, simulation experiments were conducted under a controlled-conditions environment. Results indicated that the proposed mechanism can reduce redundant network traffic up to 22%.

3. Y. Nikoloudakis et al., **“Composting as a Service: A Real-World IoT Implementation,”** Futur. Internet, vol. 10, no. 11, p. 107, 2018.

abstract: Composting is the delicate procedure of supervised decomposition of organic waste, which

gradually transforms waste to nutrient-rich manure. It requires deep knowledge and constant attention by experts to achieve a quality outcome in a timely fashion. Nevertheless, due to the bizarre nature of the materials and the overall procedure, along with the space required and emitted odors, it is required that composting infrastructures and machinery are installed away from residential areas, rendering supervision a very tedious task. Automatic composting machinery is a promising new idea, but still cannot substitute the insightfulness of a human supervisor. In this paper, we introduce COMPosting as a Service (COMPaaS). COMPaaS is a novel cloud service in composition with specialized Internet of Things (IoT)-based composting machinery that allows for unsupervised composting. The focus of this work is on the tiered IT approach that is adopted following the edge-computing paradigm. More specifically, composting machinery, enriched with several sensors and actuators, performs a set of basic routine tasks locally and sends sensor values to a cloud service which performs real-time data analysis and instructs the composting machinery to perform the appropriate actions based on the outcome of the analysis. The overall composting procedure is performed in a completely unsupervised manner, and field evaluation has shown an up to 30% faster outcome in comparison to traditional supervised composting.

4. Y. Nikoloudakis, S. Panagiotakis, E. Markakis, E. Pallis, G. Mastorakis, C. X. Mavromoustakis, and C. Dobre, "A Fog-Based Emergency System for Smart Enhanced Living Environments," *IEEE Cloud Comput.*, vol. 3, no. 6, pp. 54–62, Nov. 2016.

abstract: Ubiquitous computing paradigms, empowered by the fifth-generation networking and emerging smart ambient intelligence environments, could play a crucial role in creating better living environments for activity-challenged individuals, such as disabled or elderly people requiring constant care. Cloud computing has been an empowering force for this endeavor, although it raises several ethical, security, and user experience issues. This article presents a virtualized fog-based infrastructure for harvesting and managing distributed IT resources, shifting the entire cloud functionality to the network edge, and utilizing the cloud in an assistive manner to ensure system robustness. The infrastructure facilitates an ambient assisted-living emergency system that alerts nearby authorities when the target user leaves the identified home boundaries. It uses an outdoor positioning mechanism and emergency and Internet of Things communication protocols.

5. Y. Nikoloudakis, S. Panagiotakis, E. Markakis, G. Mastorakis, C.X. Mavromoustakis, "Towards a FOG - enabled navigation system with advanced cross-layer management features and IoT equipment," *Cloud Fog Comput. 5G Mob. Networks Emerg. Adv. Appl.*, 2017.

abstract: In this chapter, we present a cross-layer fog-enabled framework that offers visitors of small venues; such as museums, malls, convention centres, hospitals, and so on; enhanced context-aware experience and navigation services over 5G small-cell infrastructure. Distributed fog-enabled devices provide 5G networking throughout the surrounding establishment. The visitor, after signing into the network, is able to view various information and multimedia content concerning the narrow points of interest (POIs). The infrastructure also provides the ability to navigate the visitor throughout the establishment, using well-known positioning techniques. The positioning takes place with the mobile device receiving and juxtaposing the signal strength of small RF beacons sculling the local area. Finally, the network proposes other nearby POIs, depending on the user's preferences, based on the meta-data information stored inside the user's mobile device. The framework logic and calculations are transferred and sent back to the user through the cloud.

6. Y. Nikoloudakis, E. Markakis, G. Mastorakis, E. Pallis, and C. Skianis, "An NFV-Powered Emergency System for Smart Enhanced Living Environments," in *Fourth Workshop on Network Function Virtualization and Programmable Networks*, 2017, pp. 258–263.

abstract: The emergence of ubiquitous computing paradigms, and smart Ambient Intelligence environments, will play a crucial role, towards creating better living environments for activity-challenged individuals, such as disabled, or elderly people that require constant care. In addition, cloud computing has been an empowering force for that endeavour. In this paper, we propose a virtualized Cloud-based Ambient Assisted Living (AAL) system that enables caretakers and first responders to constantly monitor a patient's indoor/outdoor position and be notified in case of emergency. Positioning is made possible through an embedded device (carried by the patient) that performs proximity estimation (Wi-Fi) and cell identification (Cellular). The geolocation data are sent to a VNF (Virtual Network Function) for further processing and assessment. In case the patient drifts away from his/her premises, the VNF retrieves the closest-to-the-patient third party agents (caretakers, hospital, police, volunteers, first responders, etc.) through the Location-to-Service-translation (LoST) protocol and alerts them via a SIP-based (Session Initiation Protocol) VOIP (Voice over IP) communication.

7. Y. Nikoloudakis, S. Panagiotakis, E. Markakis, G. Atsali, and T. Manios, "Cloud composting: A centralised approach," in *2016 International Conference on Telecommunications and Multimedia (TEMU)*, 2016, pp. 1–6.

abstract: Composting is a delicate procedure that requires constant attention and knowledgeable

precision. With composting, all food and organic wastes can be managed separately of other wastes in a safe, environmentally friendly, easy and low-cost way, producing a safe, stabilized and beneficiary for the soil and the environment product. Using composting units of large-scale, one can absorb the food and organic remainings of a residential complex. In this paper, we firstly present the anatomy of such composting units. Then we propose a virtualized cloud-based management system, able to seamlessly and remotely monitor and manipulate multiple geographically distributed swarms of such composting units in a centralized manner.