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Maria Chatzimina

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ABOUT ME

Maria Chatzimina received the B.Sc. degree in Computer Science in 2010 at the Department of Informatics of the Athens University of Economics and Business (AUEB), the M.Sc. degree (2013) in Computer Science, Graphics, Computational Vision and Robotics from the Department of Computer Science of the University of Crete and the M.Sc. degree (2013) in Computer Science, Biomedical Informatics, Learning and Cognition from the Department of Computer Science of the University of Paris Sud 11. She works as a software engineer at the Computational BioMedicine Laboratory (CBML) of Institute of Computer Science at Foundation for Research and Technology – Hellas (FORTH) and has participated in multiple European programs such as EURECA (FP7-ICT-2011.7, No 288048), P-MEDICINE (FP7-ICT-2009.5.3, No 270089), iManageCancer (H2020 – PHC-26-2014-643529) and MyPAL (SC1-BHC-23-2018 – No. 825872).

From January 2020 she is a PhD candidate at the Hellenic Mediterranean University in the research area of Biomedical Informatics, studying in the advice of Professor Manolis Tsiknakis the research topic “Conversational agents as a new diagnostic tool: a proof-of-concept study in the field of palliative care”.

WORK EXPERIENCE

Foundation for Research and Technology - Hellas (FORTH)

Software Engineer

[01/11/2013 – Current]

Sunrise - Sustainable interventions and healthy behaviors for adolescent primary prevention of cancer with digital tools. Funded under HORIZON-MISS-2023-CANCER-01

1. Developed a keyword recommender system tailored to adolescents, using natural language patterns derived from peer-submitted questions to support personalized, youth-friendly digital health guidance.

Technologies:Python, Tensorflow, MySQL

ALTHEA- Tackling mental Health cancer patients and their families: digital solutions for better care. Funded under EU4H Action Grants

1. Development of an mHealth application for systematic mental health screening of patients with cancer within an Agile Scrum team

Technologies: Flutter, Dart, Python, Postgresql, HTML, JavaSript

SafePolyMed - Improve Safety in Polymedication by Managing Drug-Drug-Gene Interactions Funded under HORIZON-HLTH-2021-CARE-05-01

1. Development and validation of a biomedical software using a data-driven large language model (AI model)

CardioCare - An interdisciplinary approach for the management of the elderly multimorbid patient with breast cancer therapy induced cardiac toxicity. Funded under Horizon H2020- SC1-BHC-24-2020 /H2020

1. Development of an Android application for incontinence management
2. Development and training of data driven AI models in breast cancer imaging domain
3. Development of biomedical software for breast cancer patients

Technologies: Flutter, Dart

MyPAL- Fostering Palliative Care of Adults and Children with Cancer through Advanced Patient Reported Outcome Systems, SC1-BHC-23-2018 – No. 825872

1. Developed machine learning algorithms for natural language processing in English and Greek in cancer domain
2. Development of a chatbot for patients with hematologic malignancies with entity detection and AI models focused on blood cancer
3. Design and Development of a personalized Health Information Systems (PHR) for palliative care

Technologies: HTML, JavaSript, PHP, Integrating APIs, Rasa Framework, Flutter, Dart

iManageCancer - Empowering patients and strengthening self - management in cancer diseases. H2020-PHC-26-2014 No. 643529

1. Design and Development of Personal Health Record system (PHR) for cancer patients
2. Development of IOS, Android and Windows mobile healthcare application

Technologies: Python, Django, PostgreSQL, PHP, HTML, JavaScript

EURECA - Enabling information re-Use by linking clinical Research and Care, FP7-ICT-2011.7, No 288048.

1. Design and development of Integrated Health Information Systems for the patient (PHR)

Technologies: Python, Django, PostgreSQL, PHP, HTML, JavaScript

p-MEDICINE - From data sharing and integration via VPH models to personalized medicine, FP7-ICT-2009.5.3, No 270089.

1. Software development of Integrated Health Information Systems for the patient (PHR)

Bounce - Predicting Effective Adaptation to Breast Cancer to Help Women to BOUNCE Back (H2020)

1. Data processing and Medical text mining with supervised and unsupervised machine learning algorithms

FORTH (Foundation of Research and Technology Hellas) Institute of Computer Science

Graduate scholarship

[01/10/2011 – 31/10/2013]

Research assistant/R&D engineer. Worked on Machine Learning Algorithms, Graph Visualizations, Use of eConnectome (toolbox developed for imaging brain functional connectivity from electrophysiological signals)

CNRS-LIMSI (Computer Science Laboratory for Mechanics and Engineering Sciences)

Graduate scholarship

[31/01/2013 – 28/09/2013]

Research assistant/R&D engineer. Text mining, Use of unsupervised word classes for supervised entity detection. Application to the detection of disorders in clinical reports.

Hellenic Mediterranean University (HMU) – Heraklion, Greece

Software engineer

[01/05/2024 – 31/08/2024]

CARDIOCARE - An interdisciplinary approach for the management of the elderly multimorbid patient with breast cancer therapy induced cardiac toxicity

1. Development of innovative risk stratification models to improve early diagnosis and management of cardiotoxicity and improve QoL
2. AI models based on wearable sensor data for predicting health status and QoL, D3.6 Performance monitoring, logging and retraining of AI models

EDUCATION AND TRAINING

PhD Candidate

Hellenic Mediterranean University, Department of Electrical and Computer Engineering, Heraklion, Gr [01/01/2020 – Current]

- Training and Validating data driven AI models in cancer domain
- Training and Validating large natural language models in Greek and English in cancer domain
- Training and Validating sentiment analysis AI models in cancer domain

Master of Science (M.Sc.)

University of Crete, Department of Computer Science, Heraklion, Greece [2011 – 2013]

Field(s) of study: Master in Computer Science, Graphics, Computer Vision and Robotics

Master of Science (M.Sc.)

Université de Paris XI-Orsay, Département d'Informatique, Unité de Formation et de Recherche Orsay [2012 – 2013]

Field(s) of study: Master de Recherche en Informatique, Information, Apprentissage et Cognition | **Thesis:** Use of unsupervised word classes for supervised entity detection. Application to the detection of disorders in clinical reports.

Bachelor of Science (B.Sc.)

Athens University of Economics and Business, Department of Informatics Athens, Greece [2004 – 2010]

Field(s) of study: Informatics of Economics and Business, Operations Research Informatics Economics, Database Systems and Knowledge Management

RESEARCH EXPERIENCE

Conversational AI for Palliative Care (PhD Research)

- Developed an LLM-based chatbot for hematologic malignancies, integrating sentiment analysis and medical entity recognition.
- Finetuned a large language model (Gemma 27B) using Greek clinical conversations to enhance empathetic responses.
- Designed a sentiment analysis framework for patient interactions to detect psychological distress.
- Evaluated chatbot empathy using the Empathic Communication Coding System (ECCS) and sentiment analysis.

AI in Drug Safety (SafePolyMed)

- Developed an AI retrieval-augmented generation (RAG) system for medical knowledge extraction, ensuring controlled responses.
- Investigated drug-drug-gene interactions using large language models, focusing on clinical safety and bias mitigation.

TEACHING EXPERIENCE

Teaching Assistant Programming Courses CS-100 and CS-150 (C /C++ language)

09/2011 – 06/2012

University of Crete, Department of Computer Science, Heraklion, Greece

Teaching Assistant Programming Courses in Hellenic Mediterranean University (HMU)

- **Voice and Natural Language Processing**
  10/2024 – 02/2025

  10/2025 – 02/2026
- **Advanced Topics in Biomedical Engineering**
  02/2025 – 07/2025

  10/2023 – 02/2024
- **Biomedical Informatics**
  02/2025 – 07/2025

  02/2024 – 07/2024

  02/2023 – 07/2023
- **Project Evaluation and Management Systems**
  02/2023 – 07/2023

  02/2023 – 07/2023
- **Programming Course Multimedia eHealth Services (Flutter/Dart)**
  10/2020 – 02/2021

  10/2021 – 02/2022

  10/2022 – 02/2023
- **Data Structures**
  02/2020 – 06/2020

LANGUAGE SKILLS

Mother tongue(s): Greek

Other language(s):

English

LISTENING C2 **READING** C2 **WRITING** C2

SPOKEN PRODUCTION C2 **SPOKEN INTERACTION** C2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

AI models / Personal Health Record (PHR) / Machine Learning Algorithms (Supervised Unsupervised) / Natural language Processing / Entity Detection / Biomedical Informatics / Python / Rasa framework / AI platform: Pytorch, Tensorflow etc. / Mobile Development: Flutter & Dart / PHP Language / Restful APIs / Basic Git knowledge / PostgreSQL, MySQL / Linux / CSS / HTML / JavaScript / Google DialogFlow / Java / Electronic medical record's (EHR) / Agile-Scrum / Automation Testing - selenium

PUBLICATIONS

[2024]
A Comparative Sentiment Analysis of Greek Clinical Conversations Using BERT, RoBERTa, GPT-2, and XLNet doi: https://doi.org/10.3390/bioengineering11060521

Maria Evangelia Chatzimina, Helen A Papadaki, Charalampos Pontikoglou, Manolis Tsiknakis

[2024]
A Greek Conversational Agent for Hematologic Malignancies: Usability and User Experience Assessment doi: 10.3233/SHTI240358

Maria E Chatzimina, Helen A Papadaki, Charalampos Pontikoglou, Manolis Tsiknakis

Sentiment Analysis in Greek Clinical Conversations: A Comparative Study of BERT, VADER, and Lexicon Approaches Maria Evangelia Chatzimina, Nikolaos Oikonomou, Helen Papadaki, Manolis Tsiknakis, Charalampos Pontikoglou2023 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)doi: 10.1109/BIBM58861.2023.10385833

Designing a conversational agent for patients with hematologic malignancies: Usability and Usefulness Study Chatzimina, M., Papadaki, H., Pontikoglou, C., Koumakis, L., Marias, K. and Tsiknakis, M., 2021 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI), pp. 1-4, doi:10.1109/BHI50953.2021.9508587.

Employing Conversational Agents in Palliative Care: A Feasibility Study and Preliminary Assessment Chatzimina, M., Koumakis, L., Marias K. and Tsiknakis, M. 2019 IEEE 19th International Conference on Bioinformatics and Bioengineering (BIBE), Athens, Greece, pp. 489-496, doi: 10.1109/BIBE.2019.00095.

Use of unsupervised word classes for entity recognition: Application to the detection of disorders in clinical reports. Maria Evangelia Chatzimina, Cyril Grouin, Pierre Zweigenbaum LREC 2014: 3264-3271

Fostering Palliative Care Through Digital Intervention: A Platform for Adult Patients With Hematologic Malignancies. Koumakis, L., Schera, F., Parker, H., Bonotis, P., **Chatzimina, M.**, Argyropaidas, P., Zacharioudakis, G., Schäfer, M., Kakalou, C., Karamanidou, C., Didi, J., Kazantzaki, E., Scarfo, L., Marias, K., & Natsiavas, P. (2021). Frontiers in digital health, 3, 730722. https://doi.org/10.3389/fdgth.2021.730722

AquaScouts: ePROs Implemented as a Serious Game for Children with Cancer to Support Palliative Care. Hoffmann, S., Schraut, R., Kröll, T., Scholz, W., Belova, T., Erhardt, J., Gollmer, D., Mauck, C., Zacharioudakis, G., Meyerheim, M., Bonotis, P., Kakalou, C., **Chatzimina, M.**, Karamanidou, C., Sander, A., Didi, J., Graf, N., & Natsiavas, P. (2021). Frontiers in digital health, 3, 730948. https://doi.org/10.3389/fdgth.2021.730948

Designing smart analytical data services for a personal health framework. Koumakis, L., Kondylakis, H., **Chatzimina, M.**, Iatraki, G., Argyropaidas, P., Kazantzaki, E., Tsiknakis, M., Kiefer, S., Marias, M. Studies in health technology and informatics. 224, pp. 123-128

Personal health information recommender: implementing a tool for the empowerment of cancer patients. ecancer, Iatraki, G., Kondylakis, H., Koumakis, L., **Chatzimina, M.**, Marias, K., & Tsiknakis, M.N. (2018). 12(852), doi: https://doi.org/10.3332/ecancer.2018.852.

A content-aware analytics framework for open health data L Koumakis, H Kondylakis, DG Katehakis, G Iatraki, P Argyropaidas, **M Hatzimina**, K Mariasdoi: 10.1007/978-981-10-7419-6_10

MinePath: mining for phenotype differential sub-paths in molecular pathways Lefteris Koumakis, Alexandros Kanterakis, Evgenia Kartsaki, **Maria Chatzimina**, Michalis Zervakis, ManolisTsiknakis, Despoina Vassou, Dimitris Kafetzopoulos, Kostas Marias, Vassilis Moustakis, George Potamiasdoi: 10.1371/journal.pcbi.1005187

Designing smart analytical data services for a personal health framework. Koumakis, L., Kondylakis, H., **Chatzi mina, M.**, Iatraki, G., Argyropaidas, P., Kazantzaki, E., Tsiknakis, M.,Kiefer, S., Marias, M. Studies in health technology and informatics. 224, pp. 123-128doi: 10.3233/978-1-61499-653-8-123

Semantically-enabled Personal Medical Information Recommender. Haridimos Kondylakis, Lefteris Koumakis, Maria Psaraki, Georgia Troullinou, **Maria Chatzimina**, EleniKazantzaki, Konstantinos Marias, Manolis Tsiknakis

Patient Empowerment through Personal Medical Recommendations. Haridimos Kondylakis, Lefteris Koumakis, Eleni Kazantzaki, **Maria Chatzimina**, Maria Psaraki, Kostas Marias,Manolis Tsiknakis

Full list of publications https://scholar.google.com/citations?user=0RUR5OkAAAAJ&hl=en