Big Data for Mobility Tracking Knowledge Extraction in Urban Areas

Risultati

Informazioni relative al progetto

Track and Know

ID dell'accordo di sovvenzione: 780754

Sito web del progetto

DOI
10.3030/780754

Progetto chiuso

Data della firma CE
21 Novembre 2017

Data di avvio
1 Gennaio 2018

Data di completamento
31 Dicembre 2020

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INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies (ICT)

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Contributo UE
€ 4 848 013,75

Coordinato da
INLECOM SYSTEMS LTD
United Kingdom

CORDIS fornisce collegamenti ai risultati finali pubblici e alle pubblicazioni dei progetti ORIZZONTE.

I link ai risultati e alle pubblicazioni dei progetti del 7° PQ, così come i link ad alcuni tipi di risultati specifici come dataset e software, sono recuperati dinamicamente da .OpenAIRE.

Risultati finali

Websites, patent fillings, videos etc. (1)

Project Website

Project Website and and project social media channels set- up.

Documents, reports (7)

Interoperability requirements

Detailed specification of a common repository schema for metadata publishing/ information sharing, based on reference frameworks such as the NIST Big Data Interoperability Framework.

Cross-validation with ICT14 and ICT15 projects

Report on undertaken liaison actions with the ICT-15 Lighthouse projects TT and DataBio, including interesting outcomes of the collaboration. Evaluation of the plan for clustering activities included in D.1.2.

Dissemination Plan, Communications programme, Website

Report on the dissemination strategy, objectives and dissemination plan, events organisation. Report on the utilisation of communications tools/means such as Social media, Conferences, Workshops, Newsletters, Success Stories Factsheets, Articles, Whitepapers, Press Releases, Journal Publications, Policy Briefs etc. Organisation of training courses for end-users on Toolboxes technologies. Evaluation of the dissemination plan. Internal draft deliverable in M18 represented on Gantt as d7.3.

Results of eye-tracking evaluation

Report evaluating the VA methods developed in tasks T5.1-T5.4, in corresponding usage scenarios with appropriate categories of professional users. The evaluation will address objective user performance (how fast/correct are users in problem solving) and subjective user satisfaction.

Track and Know Observatory

Report consolidating literature review and market analysis for competing and complementing tools and technologies. Online observatory, implemented as an integral part of the project website. First version of observatory delivered in M6 along with the revier report (D1.1). A revised version of the observatory with updated content will be available online at the end of the project (RD1.1).

Liaison and Clustering

Report on undertaken liaison actions with other projects and initiatives, (apart from the ICT-15 Lighthouse projects TT and DataBio that will be covered in

deliverable D6.5), including interesting outcomes of the collaboration. Internal draft deliverable (liaison soping paper) in M6 represented on Gantt as d7.4.

Experiments Monitoring Report, Learning conclusions

This report will consolidate lessons learned from the implementation of the project pilots, incorporating validation and analysis of results for pilot measurements.

Other (2)

Development of Toolboxes Integration Connectors

Prototypes of the first version of the Track&Know integration connectors (Toolboxes), based on requirements defined in WP1. The connectors will facilitate the seamless integration of internal and external data sources.

Primitive query operators

Specification and prototype implementation of the primitive query operators (for different NoSQL stores), that will serve as a software layer very close to the storage layer, allowing effective and efficient interaction with the massive datasets stored in Track&Know.

Open Research Data Pilot (2)

Analytics for complex event recognition

Specification, use cases and prototype implementation of machine learning tools for learning complex events from data by using semantic unsupervised labelling for spatiotemporal data. Representational learning will be investigated to achieve a latent representation of spatiotemporal traces and users'/drivers' behavioural characteristics. The developed machine learning algorithms will be capable of online learning complex event patterns, in order to effectively handle the volume and velocity of the data. The core capabilities of the tools and the application of the algorithms developed, will be demonstrated through an open research data pilot with the use of open data sources. The specification report will include several use cases to allow the use and extension of the tools/algoritmes by development teams across Europe.

Analytics for mobility patterns detection and forecasting

Specification and prototype implementation of a) Customized data analysis methods and tools over Big Mobility Data, including cluster analysis and motion pattern detection, by exploiting enriched and integrated data from multiple

sources. b) Algorithms for short- and long-term forecasting of routes, flows, concentration nodes, as well as contextual characteristics, supporting outlier detection, taking advantage of previous data analytics results, as well as complex events. The core capabilities of the tools and the application of the algorithms developed, will be demonstrated through an open research data pilot with the use of open data sources. The specification report will include several use cases to allow the use and extension of the tools/algoritmes by development teams across Europe.

Pubblicazioni

Conference proceedings (12)

Contextualized Analysis of Movement Events
Autori: Siming Chen, Gennady Andrienko, Natalia Andrienko, Christos Doulkeridis, and Athanasios Koumparos4
Pubblicato in: EuroVis Workshop on Visual Analytics, 2019, ISBN 978-3-03868-087-1
Editore: The Eurographics Association
DOI: 10.2312/eurova.20191124

Towards In-Memory Sub-Trajectory Similarity Search
Autori: Omid Isfahani Alamdari, Mirco Nanni, Roberto Trasarti, Dino Pedreschi
Pubblicato in: EDBT/ICDT 2020 Joint Conference, Numero Vol 2978, 2020
Editore: CEUR

Crash Prediction and Risk Assessment with Individual Mobility Networks
Autori: Riccardo Guidotti, Mirco Nanni
Pubblicato in: 2020 21st IEEE International Conference on Mobile Data Management (MDM), 2020, Pagina/e 89-98, ISBN 978-1-7281-4663-8
Editore: IEEE
DOI: 10.1109/mdm48529.2020.00030

Parallel and Distributed Processing of Reverse Top-k Queries
Autori: Panagiotis Nikitopoulos, Georgios A. Sfyris, Akrivi Vlachou, Christos Doulkeridis,Orestis Telelis
Pubblicato in: 35th International Conference on Data Engineering, 2019, Pagina/e pp. 1586-1589
Editore: IEEE
DOI: 10.1109/icde.2019.00148

Aggregated patient journeys and no-show rates of oximetry outreach network in east Anglia
Autori: Kieran Lee, Natalia Andrienko, Gennady Andrienko, Ibad Kureshi, Toni Staykova and Ian Smith
Pubblicato in: BMJ Open Respiratory Research 2019, Numero Volume 6, Numero Suppl 1, 2019
Editore: BJM
DOI: 10.1136/bmjresp-2019-bssconf.45

Hot Spot Analysis over Big Trajectory Data
Autori: Panagiotis Nikitopoulos, Aris-Iakovos Paraskevopoulos, Christos Doulkeridis, Nikos Pelekis, Yannis Theodoridis
Pubblicato in: 2018 IEEE International Conference on Big Data (Big Data), 2018, Pagina/e 761-770, ISBN 978-1-5386-5035-6
Editore: IEEE
DOI: 10.1109/bigdata.2018.8622376

"Integration of Mobility Data with Weather Information"
Autori: Nikolaos Koutroumanis, Georgios Santipantakis, Apostolos Glenis, Christos Doulkeridis and George Vouros
Pubblicato in: EDBT/ICDT workshops 2019, 2019
Editore: EDBT/ICDT

Does chronic opioid use impact OSA diagnosis and response to treatment with CPAP?
Autori: Mary Qian, Kieran Lee, Earl Palas, Susan George, Ying Huang, Safin Rahman, Na Li, Darren Wong, Martina Mason, Ian Smith
Pubblicato in: Sleep and control of breathing, 2020, Pagina/e 2152
Editore: European Respiratory Society
DOI: 10.1183/13993003.congress-2020.2152

Online Event Recognition from Moving Vehicle: Application Paper
Autori: TSILIONIS, E., KOUTROUMANIS, N., NIKITOPOULOS, P., DOULKERIDIS, C., & ARTIKIS, A.
Pubblicato in: Theory and Practice of Logical Programming, Numero Volume 19 , Special Numero 5-6: 35th International Conference on Logic Programming, 2019, Pagina/e 841-856
Editore: Cambridge University Press
DOI: 10.1017/s147106841900022x

Scalable Distributed Subtrajectory Clustering
Autori: Panagiotis Tampakis, Nikos Pelekis, Christos Doulkeridis, Yannis Theodoridis
Pubblicato in: 2019 IEEE International Conference on Big Data (Big Data), 2019, Pagina/e 950-959, ISBN 978-1-7281-0858-2

Editore: IEEE
DOI: 10.1109/bigdata47090.2019.9005563

Cross-scale spatial enrichment of trajectories for speeding up similarity computing
Autori: Cheng Fu, Robert Weibel
Pubblicato in: 15th International Conference on Location-Based Services, 2019, Pagina/e 135-140
Editore: Vienna University of Technology
DOI: 10.34726/lbs2019

Obstructive sleep apnoea (OSA) severity in patients with chronic opioid use: a risk factor matched study
Autori: K Lee, M Mason, I Smith
Pubblicato in: Numero Volume 74, Numero Suppl 2, 2019
Editore: BMJ
DOI: 10.1136/thorax-2019-BTSabstracts2019.324

Peer reviewed articles (7)

Automating and utilising equal-distribution data classification
Autori: Gennady Andrienko, Natalia Andrienko, Ibad Kureshi, Kieran Lee, Ian Smith, Toni Staykova
Pubblicato in: International Journal of Cartography, 2020, Pagina/e 1-16, ISSN 2372-9333
Editore: Taylor & Francis
DOI: 10.1080/23729333.2020.1863000

Guidance in the human–machine analytics process
Autori: Christopher Collins, Natalia Andrienko, Tobias Schreck, Jing Yang, Jaegul Choo, Ulrich Engelke, Amit Jena, Tim Dwyer
Pubblicato in: Visual Informatics, Numero 2/3, 2018, Pagina/e 166-180, ISSN 2468-502X
Editore: Elsevier. B.V.
DOI: 10.1016/j.visinf.2018.09.003

Distributed Subtrajectory Join on Massive Datasets
Autori: Panagiotis Tampakis, Christos Doulkeridis, Nikos Pelekis, Yannis Theodoridis
Pubblicato in: ACM Transactions on Spatial Algorithms and Systems, Numero 6/2, 2020, Pagina/e 1-29, ISSN 2374-0353
Editore: Association for Computing Machinery
DOI: 10.1145/3373642

Applications of Trajectory Data From the Perspective of a Road Transportation Agency: Literature Review and Maryland Case Study

Autori: Nikola Markovic, Przemylaw Sekula, Zachary Vander Laan, Gennady Andrienko, Natalia Andrienko
Pubblicato in: IEEE Transactions on Intelligent Transportation Systems, Numero 20/5, 2019, Pagina/e 1858-1869, ISSN 1524-9050
Editore: Institute of Electrical and Electronics Engineers
DOI: 10.1109/tits.2018.2843298

Analysis of Flight Variability: a Systematic Approach

Autori: Natalia Andrienko, Gennady Andrienko, Jose Manuel Cordero Garcia, David Scarlatti
Pubblicato in: IEEE Transactions on Visualization and Computer Graphics, Numero 25/1, 2019, Pagina/e 54-64, ISSN 1077-2626
Editore: Institute of Electrical and Electronics Engineers
DOI: 10.1109/tvcg.2018.2864811

COPE: Interactive Exploration of Co-occurrence Patterns in Spatial Time Series

Autori: Jie Li, Siming Chen, Kang Zhang, Gennady Andrienko, Natalia Andrienko
Pubblicato in: IEEE Transactions on Visualization and Computer Graphics, 2018, Pagina/e 1-1, ISSN 1077-2626
Editore: Institute of Electrical and Electronics Engineers
DOI: 10.1109/tvcg.2018.2851227

Car telematics big data analytics for insurance and innovative mobility

Autori: Longhi, L., Nanni, M.
Pubblicato in: Journal of Ambient Intelligence and Humanized Computing, 2019, ISSN 0000-0000
Editore: Springer
DOI: 10.1007/s12652-019-01632-4

Book chapters (3)

Learning from Our Movements – The Mobility Data Analytics Era

Autori: Yannis Theodoridis
Pubblicato in: Multiple-Aspect Analysis of Semantic Trajectories - First International Workshop, MASTER 2019, Held in Conjunction with ECML-PKDD 2019, Würzburg, Germany, September 16, 2019, Proceedings, Numero 11889, 2020, Pagina/e 1-5, ISBN 978-3-030-38080-9
Editore: Springer International Publishing
DOI: 10.1007/978-3-030-38081-6_1

Online Learning of Weighted Relational Rules for Complex Event Recognition

Autori: Nikos Katzouris, Evangelos Michelioudakis, Alexander Artikis, Georgios Paliouras
Pubblicato in: Machine Learning and Knowledge Discovery in Databases - European Conference, ECML PKDD 2018, Dublin, Ireland, September 10–14, 2018, Proceedings, Part II, Numero 11052, 2019, Pagina/e 396-413, ISBN 978-3-030-10927-1
Editore: Springer International Publishing
DOI: 10.1007/978-3-030-10928-8_24

Investigating Neighborhood Generation Methods for Explanations of Obscure Image Classifiers

Autori: Riccardo Guidotti, Anna Monreale, Leonardo Cariaggi
Pubblicato in: Advances in Knowledge Discovery and Data Mining - 23rd Pacific-Asia Conference, PAKDD 2019, Macau, China, April 14-17, 2019, Proceedings, Part I, Numero 11439, 2019, Pagina/e 55-68, ISBN 978-3-030-16147-7
Editore: Springer International Publishing
DOI: 10.1007/978-3-030-16148-4_5

Other (1)

Obstructive sleep apnoea (OSA) and response to CPAP treatment in patients with chronic opioid use
Autori: Lee K, Mason M, Smith I
Pubblicato in: Thorax 2018;73:A128-A129, 2018
Editore: BMJ

Set di dati

Set di dati mediante OpenAIRE (6)

London Graph Dataset

Autori: Longhi, Leonardo; Nisi, Marco
Pubblicato in: Zenodo

Tuscany City Features

Autori: Longhi, Leonardo; Nisi, Marco
Pubblicato in: Zenodo

Private vehicles GPS data
Autori: Koumparos, Athanasios
Pubblicato in: Zenodo

Attika GPS data
Autori: Athanasios Koumparos (10009099)
Pubblicato in: Zenodo

Driving data for simulated sleepiness, real sleep deprivation and normal controls.
Autori: Smith, Ian
Pubblicato in: Zenodo

Synthetic Patient Appointment Dataset
Autori: Kureshi, Ibad
Pubblicato in: Zenodo

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Permalink: https://cordis.europa.eu/project/id/780754/results/it