1. Record Nr. UNISA996426329703316 Autore Wang Dong Titolo Social sensing: building reliable systems on unreliable data / / Dong Wang, Tarek Abdelzaher, Lance Kaplan Amsterdam:,: Elsevier,, [2015] Pubbl/distr/stampa ©2015 **ISBN** 0-12-800867-9 Edizione [First edition.] Descrizione fisica 1 online resource (232 p.) Disciplina 302.30285 Soggetti Social media - Data processing Information technology Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references and index. Nota di contenuto ""Front Cover""; ""Social Sensing: Building Reliable Systems on Unreliable Data""; ""Copyright""; ""Dedication""; ""Contents""; ""Acknowledgments""; ""Authors""; ""Dong Wang""; ""Tarek Abdelzaher""; ""Lance M. Kaplan""; ""Foreword""; ""Preface""; ""Chapter 1: A new information age""; ""1.1 Overview""; ""1.2 Challenges""; ""1.3 State of the Art""; ""1.3.1 Efforts on Discount Fusion""; ""1.3.2 Efforts on Trust and Reputation Systems""; ""1.3.3 Efforts on Fact-Finding""; ""1.4 Organization""; ""Chapter 2: Social Sensing Trends and Applications""; ""2.1 Information Sharing: The Paradigm Shift"" ""2.2 An Application Taxonomy""""2.3 Early Research""; ""2.4 The Present Time""; ""2.5 ANote on Privacy""; ""Chapter 3: Mathematical foundations of social sensing: An introductory tutorial""; ""3.1 AMultidisciplinary Background""; ""3.2 Basics of Generic Networks""; ""3.3 Basics of Bayesian Analysis""; ""3.4 Basics of Maximum Likelihood Estimation"": ""3.5 Basics of Expectation Maximization"": ""3.6 Basics of Confidence Intervals""; ""3.7 Putting It All Together""; ""Chapter 4: Factfinding in information networks""; ""4.1 Facts, Fact-Finders, and the Existence of Ground Truth""

""4.2 Overview of Fact-Finders in Information Networks"""4.3 A Bayesian Interpretation of Basic Fact-Finding"; ""4.3.1 Claim

Credibility""; ""4.3.2 Source Credibility""; ""4.4 The Iterative Algorithm"";

""4.5 Examples and Results""; ""4.6 Discussion""; ""Appendix""; ""Chapter 5: Social Sensing: A maximum likelihood estimation approach""; ""5.1 The Social Sensing Problem""; ""5.2 Expectation Maximization""; ""5.2.1 Background""; ""5.2.2 Mathematical Formulation""; ""5.2.3 Deriving the E-Step and M-Step""; ""5.3 The EM Fact-Finding Algorithm""; ""5.4 Examples and Results"" ""5.4.1 A Simulation Study""""5.4.2 A Geotagging Case Study""; ""5.4.3 A Real World Application""; ""5.5 Discussion""; ""Chapter 6: Confidence bounds in social sensing""; ""6.1 The Reliability Assurance Problem""; ""6.2 Actual Cramer-Rao Lower Bound""; ""6.3 Asymptotic Cramer-Rao Lower Bound""; ""6.4 Confidence Interval Derivation""; ""6.5 Examples and Results""; ""6.5.1 Evaluation of Confidence Interval""; ""6.5.2 Evaluation of CRLB""; ""Scalability study""; ""Trustworthiness and assertiveness study""; ""Robustness study"" ""6.5.3 Evaluation of Estimated False Positives/Negatives on Claim Classification"""Scalability study""; ""Trustworthiness and assertiveness study""; ""Robustness study""; ""6.5.4 AReal World Case Study""; ""6.6 Discussion""; ""Appendix""; ""Chapter 7: Resolving conflicting observations and non-binary claims"; ""7.1 Handling Conflicting Binary Observations""; ""7.1.1 Extended Model""; ""7.1.2 Re-Derive the E-Step and M-Step""; ""7.1.3 The Binary Conflict EM Algorithm""; ""7.2 Handling Non-Binary Claims""; ""7.2.1 Generalized E and M Steps for Non-Binary Measured Variables"" ""7.2.2 The Generalized EM Algorithm for Non-Binary Measured Variables""

Sommario/riassunto

Increasingly, human beings are sensors engaging directly with the mobile Internet. Individuals can now share real-time experiences at an unprecedented scale. Social Sensing: Building Reliable Systems on Unreliable Data looks at recent advances in the emerging field of social sensing, emphasizing the key problem faced by application designers: how to extract reliable information from data collected from largely unknown and possibly unreliable sources. The book explains how a myriad of societal applications can be derived from this massive amount of data collected and shared by average individu