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## Preface

This book is an outcome of a special workshop on Localization in Wireless Sensor Networks, held between June 13-14 of 2005, at the University of Washington, Seattle.

During several technical discussions, Dr. Radha Poovendran of University of Washington and ARO Information Assurance (IA) program director Dr. Cliff Wang felt that robust and resilient localization for wireless sensor networks is an important research area and a special workshop was needed to address the research challenges and to promote innovative ideas for solutions. Dr. Sumit Roy from the University of Washington later joined the organizing committee. The workshop was organized and held successfully. Over 30 researchers participated in the workshop and a total of 18 presentations were made, covering various aspects of the localization problem.

This book is a direct outcome of this special workshop. We have also expanded the scope of this book to include secure time synchronization since the techniques used for localization distance bounding protocols are dependent on correct time synchronization of wireless sensor networks. A total of sixteen contributed papers are received from both workshop participants and researchers active in wireless sensor network research. The collection of these high quality papers makes this edited volume a valuable resource for both researchers and engineers in related fields. We believe that this book will serve as a reference as well as the starting point of research in the exciting areas of secure location estimation, secure time synchronization, verification of sensor security protocols, and location privacy.

The book is organized into three parts. The chapters in Part I present approaches for sensor location estimation under a benign environment and technical discussions focus on the quality of location estimation. The chapters in the Part II of the book contain the latest work on resilient sensor location estimation in the presence of an adversary that may inject Byzantine errors into the localization process. Also in Part II of the book, there is one chapter dedicated to distance bounding protocol verification and there is another chapter that focuses specifically on privacy protection against location tracking. The Part III of the book contains chapters addressing the problem of secure time synchronization in wireless sensor networks.

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