

1. Record Nr.	UNINA9910825265403321
Titolo	Designing human-machine cooperation systems // edited by Patrick Millot
Pubbl/distr/stampa	London, England ; ; Hoboken, New Jersey : , : ISTE : , : Wiley, , 2014 ©2014
ISBN	1-118-98437-4 1-118-98439-0 1-118-98436-6
Descrizione fisica	1 online resource (412 p.)
Collana	Control, Systems and Industrial Engineering Series
Disciplina	620.82
Soggetti	Human-machine systems - Computer aided design Human-machine systems - Design Automation - Human factors
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Cover; Title Page ; Copyright; Contents; Foreword; Introduction; Part 1. Design of Human-Machine Systems; Chapter 1. Human-Centered Design; 1.1. Introduction; 1.2. The task-system-operator triangle; 1.2.1. Controlling the diversity of the tasks depending on the situation; 1.2.2. Managing the complexity of the system; 1.2.3. Managing human complexity; 1.3. Organization of the human-machine system; 1.3.1. The ambiguous role of the operator in automated systems; 1.3.2. Allocating humans with their proper role; 1.3.3. Sharing tasks and functions between humans and machines 1.4. Human-centered design methodology 1.5. Conclusion; 1.6. Bibliography; Chapter 2. Integration Of Ergonomics In The Design Of Human-Machine Systems; 2.1. Introduction; 2.2. Classic and partial approaches of the system; 2.2.1. Machine-centered approach; 2.2.2. Activity and human-based approaches; 2.3. The central notion of performance (Long, Dowell and Timmer); 2.4. An integrated approach: cognitive work analysis; 2.4.1. Domain analysis; 2.4.2. Task analysis; 2.4.3. Analysis of information-processing strategies; 2.4.4. Socio-

organizational approach; 2.4.5. Analysis of competences
 2.4.6. Some general remarks on the integrated approach 2.5.
 Conclusion; 2.6. Bibliography; Chapter 3. The Use of Accidents in
 Design: The Case of Road Accidents; 3.1. Accidents, correction and
 prevention; 3.2. Analysis of accidents specific to the road; 3.2.1. Road
 accidents as a statistical unit; 3.2.2. Accidents as diagnosis tools; 3.3.
 Need-driven approach; 3.3.1. Definition of needs from the analysis of
 accidents; 3.3.2. Particular case of urban areas; 3.4. A priori analyses;
 3.5. What assistance for which needs?; 3.5.1. Collision with a stationary
 vehicle
 3.5.2. The struck vehicle is waiting to turn on an NR or a DR 3.5.3.
 Catching up with a slower vehicle; 3.5.4. Dense lines: major incident at
 the front; 3.5.5. Dense line: violent accident happening just in front;
 3.5.6. Dense line: sudden slowing; 3.6. Case of cooperative systems;
 3.7. Using results in design; 3.7.1. Detection of a slower user; 3.7.2.
 Detection of several stopped vehicles blocking all the lanes; 3.7.3.
 Detection of a stopped vehicle completely or partially obstructing a
 road; 3.7.4. Detection of a vehicle preparing to turn left
 3.7.5. Detection of light two-wheelers circulating on the right-hand
 side of the road 3.7.6. Detection of a disturbance at the front of the
 line; 3.7.7. Prevention of wild insertions; 3.7.8. Prevention of frontal
 collisions; 3.8. Conclusion; 3.9. Bibliography; Part 2. Evaluation Models
 of Human-Machine Systems; Chapter 4. Models Based on the Analysis
 of Human Behavior: Example of the Detection of Hypo-Vigilance in
 Automobile Driving; 4.1. Introduction; 4.2. The different models used
 in detection and diagnosis; 4.2.1. Methods based on knowledge models
 4.2.2. Classification methods: pattern recognition

Sommario/riassunto

This book on the ergonomics of man-machine systems is aimed at engineers specializing in informatics, automation, production or robotics, and who are confronted with an important dilemma during the conception of man-machine systems: - on the one hand, the human operator guarantees the reliability of the system and he has been known to salvage numerous critical situation through an ability for reason in unplanned, imprecise and uncertain situations; - on the other hand, the human operator can be unpredictable and create disturbances in the automated system. The first part
