



< Back to results | < Previous 3 of 25 Next >

Download Print Save to PDF Add to List Create bibliography

Proceedings - 2022 IEEE International Conference on Cybernetics and Computational Intelligence, CyberneticsCom 2022

Pages 202 - 206 • 2022 • 6th IEEE International Conference on Cybernetics and Computational Intelligence, CyberneticsCom 2022
• Virtual, Malang • 16 June 2022through 18 June 2022 • Code 182420

Document type

Conference Paper

Source type

Conference Proceedings

ISBN

978-166549742-8

DOI

10.1109/CyberneticsCom55287.2022.9865662

View more

A Driving Situation Inference for Autopilot Agent Transparency in Collaborative Driving Context

Kridalukmana, Rinta ; Eridani, Dania ; Septiana, Risma ; Rochim, Adian F. ;

Setyobudhi, Charisma T. ;

Save all to author list

^a Diponegoro University, Department of Computer Engineering, Semarang, Indonesia

7

Views count

View all metrics

Full text options Export

Abstract

Author keywords

Indexed keywords

SciVal Topics

Metrics

Abstract

Overly trust in the autopilot agent has been identified as the primary factor of road incidents involving autonomous cars. As this agent is considered a human driver counterpart in the collaborative driving context, many researchers suggest its transparency to mitigate such overly trust mental model. Hence, this paper aims to develop a driving situation inference method as a transparency provider explaining the types of situations the autopilot agent encounters leading to its certain decision. The proposed method is verified using an autonomous driving simulator called Carla. The findings show that the proposed method can generate situations which enable the human driver to calibrate their trust in the autopilot agent. © 2022 IEEE.

Author keywords

collaborative driving; human-agent interaction; situation inference; transparency

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert >

Related documents

Fuzzy Cognitive Maps for Intelligent Agent's Artificial Situational Awareness in Collaborative Driving Context

Kridalukmana, R. , Eridani, D. , Septiana, R. (2022) *International Conference on Electrical Engineering, Computer Science and Informatics (EECSI)*

Artificial Situation Awareness for an Intelligent Agent

Kridalukmana, R. , Eridani, D. , Septiana, R. (2022) *2022 19th International Joint Conference on Computer Science and Software Engineering, JCSSE 2022*

Self-Explaining Abilities of an Intelligent Agent for Transparency in a Collaborative Driving Context

Kridalukmana, R. , Lu, H. , Naderpour, M. (2022) *IEEE Transactions on Human-Machine Systems*

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

References (23)

[View in search results format >](#) All[Export](#)  [Print](#)  [E-mail](#)  [Save to PDF](#) [Create bibliography](#)

-
- 1 Lin, S.-P., Maxemchuk, N.F.
An architecture for collaborative driving systems
(2012) *Proceedings - International Conference on Network Protocols, ICNP*, art. no. 6459954. Cited 8 times.
ISBN: 978-146732447-2
doi: 10.1109/ICNP.2012.6459954
[View at Publisher](#)
-
- 2 Xing, Y., Lv, C., Cao, D., Hang, P.
Toward human-vehicle collaboration: Review and perspectives on human-centered collaborative automated driving
(2021) *Transportation Research Part C: Emerging Technologies*, 128, art. no. 103199. Cited 29 times.
www.elsevier.com/inca/publications/store/1/3/0/
doi: 10.1016/j.trc.2021.103199
[View at Publisher](#)
-
- 3 Li, W., Duan, F., Xu, C.
Design and Performance Evaluation of a Simple Semi-Physical Human-Vehicle Collaborative Driving Simulation System ([Open Access](#))
(2019) *IEEE Access*, 7, art. no. 8661605, pp. 31971-31983. Cited 9 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6287639>
doi: 10.1109/ACCESS.2019.2903305
[View at Publisher](#)
-
- 4 Endsley, M.R.
From Here to Autonomy: Lessons Learned from Human-Automation Research
(2017) *Human Factors*, 59 (1), pp. 5-27. Cited 322 times.
<http://hfs.sagepub.com/>
doi: 10.1177/0018720816681350
[View at Publisher](#)
-
- 5 Banks, V.A., Eriksson, A., O'Donoghue, J., Stanton, N.A.
Is partially automated driving a bad idea? Observations from an on-road study ([Open Access](#))
(2018) *Applied Ergonomics*, 68, pp. 138-145. Cited 147 times.
www.elsevier.com/locate/apergo
doi: 10.1016/j.apergo.2017.11.010
[View at Publisher](#)
-

- 6 Körber, M., Baseler, E., Bengler, K.
Introduction matters: Manipulating trust in automation and reliance in automated driving ([Open Access](#))

(2018) *Applied Ergonomics*, 66, pp. 18-31. Cited 194 times.
www.elsevier.com/locate/apergo
doi: 10.1016/j.apergo.2017.07.006

View at Publisher
-
- 7 Freiman, M., Caisse, M., Ball, J., Halverson, T., Myers, C.
Empirically Identified Gaps in a Situation Awareness Model for Human-Machine Coordination

(2018) *Proceedings - 2018 IEEE International Conference on Cognitive and Computational Aspects of Situation Management, CogSIMA 2018*, art. no. 8423980, pp. 110-116. Cited 4 times.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8412842>
ISBN: 978-153865288-6
doi: 10.1109/COGSIMA.2018.8423980

View at Publisher
-
- 8 Stanton, N.A., Salmon, P.M., Walker, G.H., Salas, E., Hancock, P.A.
State-of-science: situation awareness in individuals, teams and systems ([Open Access](#))

(2017) *Ergonomics*, 60 (4), pp. 449-466. Cited 155 times.
www.tandf.co.uk/journals/titles/00140139.asp
doi: 10.1080/00140139.2017.1278796

View at Publisher
-
- 9 Stanton, N.A., Stewart, R., Harris, D., Houghton, R.J., Baber, C., McMaster, R., Salmon, P., (...), Green, D.
Distributed situation awareness in dynamic systems: Theoretical development and application of an ergonomics methodology ([Open Access](#))

(2006) *Ergonomics*, 49 (12-13), pp. 1288-1311. Cited 376 times.
doi: 10.1080/00140130600612762

View at Publisher
-
- 10 McAree, O., Chen, W.-H.
Artificial situation awareness for increased autonomy of unmanned aerial systems in the terminal area ([Open Access](#))

(2013) *Journal of Intelligent and Robotic Systems: Theory and Applications*, 70 (1-4), pp. 545-555. Cited 21 times.
doi: 10.1007/s10846-012-9738-x

View at Publisher
-
- 11 Underwood, G., Ngai, A., Underwood, J.
Driving experience and situation awareness in hazard detection

(2013) *Safety Science*, 56, pp. 29-35. Cited 81 times.
doi: 10.1016/j.ssci.2012.05.025

View at Publisher
-

- 12 Abe, M., Yamamoto, G., Miyahira, T.
Rule-based situation inference for connected vehicles
(2017) Proceedings - 2017 IEEE 2nd International Congress on Internet of Things, ICIOT 2017, art. no. 8039070, pp. 159-161. Cited 5 times.
ISBN: 978-153862011-3
doi: 10.1109/IEEE.ICIOT.2017.28
[View at Publisher](#)
-

- 13 Abe, M., Yamamoto, G., Furuichi, S.
(WIP) IoT context descriptor: Situation detection and action invocation model for real-time high-volume transactions
(2018) Proceedings - 2018 IEEE International Congress on Internet of Things, ICIOT 2018 - Part of the 2018 IEEE World Congress on Services, art. no. 8473450, pp. 130-133. Cited 4 times.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8457595>
ISBN: 978-153867244-0
doi: 10.1109/ICIOT.2018.00025
[View at Publisher](#)
-

- 14 Al-Ajlan, A.
The comparison between forward and backward chaining
(2015) International Journal of Machine Learning and Computing, 5 (2), p. 106. Cited 59 times.
-

- 15 Harbers, M., Van Den Bosch, K., Meyer, J.-J.
Design and evaluation of explainable BDI agents
(2010) Proceedings - 2010 IEEE/WIC/ACM International Conference on Intelligent Agent Technology, IAT 2010, 2, art. no. 5614190, pp. 125-132. Cited 45 times.
ISBN: 978-076954191-4
doi: 10.1109/WI-IAT.2010.115
[View at Publisher](#)
-

- 16 Kaptein, F., Broekens, J., Hindriks, K., Neerincx, M.
Personalised self-explanation by robots: The role of goals versus beliefs in robot-action explanation for children and adults
(2017) RO-MAN 2017 - 26th IEEE International Symposium on Robot and Human Interactive Communication, 2017-January, pp. 676-682. Cited 41 times.
ISBN: 978-153863518-6
doi: 10.1109/ROMAN.2017.8172376
[View at Publisher](#)
-

- 17 Hagele, G., Sarkheyli-Hagele, A.
Situational Hazard Recognition and Risk Assessment within Safety-Driven Behavior Management in the Context of Automated Driving
(2020) Proceedings - 2020 IEEE International Conference on Cognitive and Computational Aspects of Situation Management, CogSIMA 2020, art. no. 9216183, pp. 188-194. Cited 6 times.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=9205956>
ISBN: 978-172816001-6
doi: 10.1109/CogSIMA49017.2020.9216183
[View at Publisher](#)
-

- 18 Nigro, J.-M., Lorette-Rougegréz, S., Rombaut, M.
Driving situation recognition with uncertainty management and rule-based systems
(2002) *Engineering Applications of Artificial Intelligence*, 15 (3-4), pp. 217-228. Cited 18 times.
doi: 10.1016/S0952-1976(02)00070-2
[View at Publisher](#)
-
- 19 Nigro, J.M., Rombaut, M.
IDRES: A rule-based system for driving situation recognition with uncertainty management
(2003) *Information Fusion*, 4 (4), pp. 309-317. Cited 24 times.
doi: 10.1016/S1566-2535(03)00042-3
[View at Publisher](#)
-
- 20 Lu, G., Li, L., Wang, Y., Zhang, R., Bao, Z., Chen, H.
A rule based control algorithm of connected vehicles in uncontrolled intersection
(2014) *2014 17th IEEE International Conference on Intelligent Transportation Systems, ITSC 2014*, art. no. 6957676, pp. 115-120. Cited 30 times.
ISBN: 978-147996078-1
doi: 10.1109/ITSC.2014.6957676
[View at Publisher](#)
-
- 21 Li, J., Ma, H., Zhan, W., Tomizuka, M.
Generic Probabilistic Interactive Situation Recognition and Prediction: From Virtual to Real ([Open Access](#))
(2018) *IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC, 2018-November*, art. no. 8569780, pp. 3218-3224. Cited 26 times.
ISBN: 978-172810323-5
doi: 10.1109/ITSC.2018.8569780
[View at Publisher](#)
-
- 22 Reynolds, O.
Towards model-driven self-explanation for autonomous decision-making systems
(2019) *Proceedings - 2019 ACM/IEEE 22nd International Conference on Model Driven Engineering Languages and Systems Companion, MODELS-C 2019*, art. no. 8904475, pp. 624-628. Cited 4 times.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8892449>
ISBN: 978-172815125-0
doi: 10.1109/MODELS-C.2019.00095
[View at Publisher](#)
-
- 23 Dosovitskiy, A., Ros, G., Codevilla, F., Lopez, A., Koltun, V.
Carla: An open urban driving simulator
(2017) *Proceedings of the 1st Annual Conference on Robot Learning*, pp. 1-16. Cited 2054 times.

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語版を表示する](#)

[查看简体中文版本](#)

[查看繁體中文版本](#)

[Просмотр версии на русском языке](#)

Customer Service

[Help](#)

[Tutorials](#)

[Contact us](#)

ELSEVIER

[Terms and conditions ↗](#) [Privacy policy ↗](#)

Copyright © Elsevier B.V. ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies ↗.





THE IEEE CYBERNETICSCOM 2022

2022 IEEE International Conference on Cybernetics and Computational Intelligence



CALL FOR PAPERS

Dear Our Colleagues,

It is our great pleasure to announce that the 6th 2022 IEEE International Conference on Cybernetics and Computational Intelligence (IEEE CyberneticsCom 2022) will be held in Malang, Indonesia on June 16-18, 2022. **IEEE CyberneticsCom a flagships conference of IEEE Indonesia Section** since 2012. This year, the IEEE CyberneticsCom is organized by Institut Teknologi Telkom Purwokerto (ITTP) and supported by IEEE The Indonesia Section Computer Society Chapter (TISCSC) and IEEE SMC Indonesia Chapter.

The IEEE CyberneticsCom 2022 aims to address current state of the technology and outcome of the ongoing research in the area of Cybernetics and Computational Intelligence towards a smart and Human-centered cyber world. Topics of interest include 6 (six) tracks, but are not limited to **Cybernetics, Human Machine Systems, Systems Science, Engineering and Computational Intelligence, Data Science, and Artificial Intelligence.**

IMPORTANT DATE

PAPERS SUBMISSION DEADLINE	APRIL 10, 2022 (MAY 16, 2022)
NOTIFICATION OF ACCEPTANCE	APRIL 16, 2022 (MAY 27, 2022)
REGISTRATION	MAY 01, 2022

PAPER SUBMISSION

Papers should contain original material which is not currently under review in any other conference or journal and has not been previously published. All Submissions should be written in English with a maximum paper length of six printed pages standard IEEE conference two-column format including figures.

Only PDF files will be accepted for the peer review process. All submissions must be done through EDAS online submission system : <https://edas.info/29371>

VENUE & DATE

MALANG, JUNE 16-18, 2022 (online zoom meeting)

IEEE CYBERNETICSCOM 2022 KEYNOTE SPEAKERS :



Prof. Mario Köppen
Kyushu Institute of Technology,
Japan



Dr. Jemy V. Cofindo
PT. Telkom Indonesia



Assoc. Prof. Mahardhika Pratama
University of South Australia,
Australia

REGISTRATION FEE (USD)

Registration Type	Rate
- Student Member IEEE	100
- Student Non Member	150
- Author Member IEEE	150
- Author Non Member	200
- Additional Paper	50

ORGANIZED BY :



Co-Host :



For more information, please visit : www.cyberneticscom.id
Contact Us : cyberneticscom@ittelkom-pwt.ac.id



All



[ADVANCED SEARCH](#)

Conferences > 2022 IEEE International Confe... [?](#)

A Driving Situation Inference for Autopilot Agent Transparency in Collaborative Driving Context

Publisher: IEEE

[Cite This](#)

[PDF](#)

Rinta Kridalukmana ; Dania Eridani ; Risma Septiana ; Adian F. Rochim ; Charisma T. Setyobudhi [All Authors](#) ...



38
Full
Text Views

Alerts

[Manage Content Alerts](#)
[Add to Citation Alerts](#)

Abstract



Downl
PDF

Document Sections

- I. Introduction
- II. Related Studies
- III. The Proposed Situation Inference Approach
- IV. Experimental Evaluation
- V. Conclusions

Abstract:Overly trust in the autopilot agent has been identi-fied as the primary factor of road incidents involving autonomous cars. As this agent is considered a human driver cou... [View more](#)

▶ Metadata

Abstract:

Overly trust in the autopilot agent has been identi-fied as the primary factor of road incidents involving autonomous cars. As this agent is considered a human driver counterpart in the collaborative driving context, many researchers suggest its transparency to mitigate such overly trust mental model. Hence, this paper aims to develop a driving situation inference method as a transparency provider explaining the types of situations the autopilot agent encounters leading to its certain decision. The proposed method is verified using an autonomous driving simulator called Carla. The findings show that the proposed method can generate situations which enable the human driver to calibrate their trust in the autopilot agent.

Published in: 2022 IEEE International Conference on Cybernetics and Computational Intelligence (CyberneticsCom)

Date of Conference: 16-18 June 2022

INSPEC Accession Number: 22010226

Date Added to IEEE Xplore: 29 August 2022

DOI: 10.1109/CyberneticsCom55287.2022.9865662

▶ ISBN Information:

Publisher: IEEE

Conference Location: Malang, Indonesia

[Authors](#)

[Figures](#)

[References](#)

[Keywords](#)

[Metrics](#)

[More Like This](#)

I. Introduction

An intelligent agent's role in smart cars is shifting from a supporting agent into a human counterpart [1], [2]. With this role, the agent can replace the human driver to perform driving tasks when the autopilot mode is activated. In manual mode, this agent helps to avoid hazardous events having a high risk of an accident. Such a collaboration between the intelligent agent and the human driver is called collaborative driving, which can be classified as level 4 of six levels (0–5) of autonomous driving according to the Society of Automotive Engineering [3]. Furthermore, the interaction between the human and an intelligent agent in collaborative driving can be an example of human-autonomy teaming (HAT) [4].

Authors	▼
Figures	▼
References	▼
Keywords	▼
Metrics	▼

More Like This

The Smart Automobile (SAM): An Application Based on Drowsiness Detection, Alcohol Detection, Vital Sign Monitoring and Lane based Auto Drive to avoid Accidents

2020 Global Conference on Wireless and Optical Technologies (GCWOT)

Published: 2020

Examining the Impact on Road Safety of Different Penetration Rates of Vehicle-to-Vehicle Communication and Adaptive Cruise Control

IEEE Intelligent Transportation Systems Magazine

Published: 2018

Show More

IEEE Personal Account

CHANGE
USERNAME/PASSWORD

Purchase Details

PAYMENT OPTIONS
VIEW PURCHASED
DOCUMENTS

Profile Information


COMMUNICATIONS
PREFERENCES
PROFESSION AND
EDUCATION
TECHNICAL INTERESTS

Need Help?

US & CANADA: +1 800 678
4333
WORLDWIDE: +1 732 981
0060
CONTACT & SUPPORT

Follow



[About IEEE Xplore](#) | [Contact Us](#) | [Help](#) | [Accessibility](#) | [Terms of Use](#) | [Nondiscrimination Policy](#) | [IEEE Ethics Reporting](#)  | [Sitemap](#) | [IEEE Privacy Policy](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

© Copyright 2023 IEEE - All rights reserved.

IEEE Account

- » [Change Username/Password](#)
- » [Update Address](#)

Purchase Details

- » [Payment Options](#)
- » [Order History](#)
- » [View Purchased Documents](#)

Profile Information

- » [Communications Preferences](#)
- » [Profession and Education](#)
- » [Technical Interests](#)

Need Help?

- » **US & Canada:** +1 800 678 4333
- » **Worldwide:** +1 732 981 0060
- » [Contact & Support](#)

[About IEEE Xplore](#) | [Contact Us](#) | [Help](#) | [Accessibility](#) | [Terms of Use](#) | [Nondiscrimination Policy](#) | [Sitemap](#) | [Privacy & Opting Out of Cookies](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

© Copyright 2023 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.