

Scheduled System Maintenance: Documents added to IEEE Xplore in May 2021 will be unavailable for online purchase until 18 May. We apologize for the inconvenience.

IEEE.orgIEEE XploreIEEE-SAIEEE SpectrumMore SitesSUBSCRIBESUBSCRIBECardCreate AccountPersonal Sign In

IEEE Xplore

BrowseMy SettingsHelpInstitutional Sign In

Institutional Sign In

All

ADVANCED SEARCH

Conferences > 2020 23rd International Sympo...

Learning to Play Robot Soccer from Partial Observations

Publisher: IEEE

Cite This

PDF

Márton Szemenyei ; Patrik ReizingerAll Authors

36 Full Text Views

Export to Collaboratec Alerts

Manage Content AlertsAdd to Citation Alerts

More Like This

A deep reinforcement learning approach to preserve connectivity for multi-robot systems
2017 10th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics (CISP-BMEI)
Published: 2017

Decentralized Function Approximated Q-Learning in Multi-Robot Systems For Predator Avoidance
IEEE Robotics and Automation Letters
Published: 2020

Show More

Abstract

Document Sections

I. Introduction

II. Related Work

III. Environment

IV. Model

V. Experimental Results

Show Full Outline

Authors

Figures

References

Keywords

Metrics

More Like This

Downl PDF

Abstract:Reinforcement learning (RL) has undergone unprecedented evolution in the last few years, managing to surpass the human baseline in several high-profile board and computer... **View more**

Metadata
Abstract:
Reinforcement learning (RL) has undergone unprecedented evolution in the last few years, managing to surpass the human baseline in several high-profile board and computer games. Despite these successes, deep neural agents remained absent in several challenging fields, such as robot soccer, which is a rather complex task involving simultaneous cooperation and competition between multiple agents. In this paper, we investigate the feasibility of playing robot soccer via deep reinforcement learning using an environment of our own making. This environment provides the agent with imperfect and incomplete observations to simulate the errors of a real vision pipeline. To improve the agent's performance on this task, an intrinsic reward module is proposed based on self-supervised learning. Our experiments show that the proposed extension significantly improves the agent.

Published in: 2020 23rd International Symposium on Measurement and Control in Robotics (ISMCR)

Date of Conference: 15-17 Oct. 2020 **INSPEC Accession Number:** 20199498

Date Added to IEEE Xplore: 23 November 2020 **DOI:** 10.1109/ISMCR51255.2020.9263715

☰ Contents

I. Introduction

RoboCup is a major yearly international event aimed at advancing research in the fields of Artificial Intelligence (AI) and Robotics. The event provides numerous challenges involving robots performing specific complex tasks, such as playing organized league, assisting home assistance, or participating in rescue missions. All of these challenges include several different leagues with different robot hardware capabilities and slight variations on the task.

Authors



Figures



References



Keywords



Metrics



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 | 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 2021 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.

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 2021 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.

IEEE websites place cookies on your device to give you the best user experience. By using our websites, you agree to the placement of these cookies. To learn more, read our [Privacy Policy](#).

Accept & Close