

# REINFORCEMENT LEARNING AN INTRODUCTION RICHARD S SUTTON

REINFORCEMENT LEARNING REINFORCEMENT LEARNING SESSIONAL INDEXES TO THE ANNALS OF CONGRESS COMPUTER GRAPHICS AND DATABASE MANAGEMENT, 1991 THE PROCEEDINGS AND MEMBERSHIP LIST OF THE THOMAS WOLFE SOCIETY DICTIONARY OF NATIONAL BIOGRAPHY A CRITICAL DICTIONARY OF ENGLISH LITERATURE AND BRITISH AND AMERICAN AUTHORS, LIVING AND DECEASED, FROM THE EARLIEST ACCOUNT TO THE LATTER HALF OF THE NINETEENTH CENTURY THE ANNUAL AMERICAN CATALOGUE 1886-1900 THE PACIFIC REPORTER THE REGISTER BOOKE OF CHRISTENINGES, MARRIAGES AND BURIALLS IN SAINT DUNSTAN'S, CANTERBURY, 1559-1800 PUBLISHERS' CIRCULAR AND BOOKSELLERS' RECORD THE AMERICAN MATHEMATICAL MONTHLY THE VISION OF WILLIAM CONCERNING PIERS PLOWMAN THE CRITIC THE BOOKSELLER THE PUBLISHERS WEEKLY THE BRITISH LIBRARY GENERAL CATALOGUE OF PRINTED BOOKS TO 1975 THE ATHENAEUM AMERICAN BOOK PUBLISHING RECORD ENRICHMENT MATHEMATICS FOR HIGH SCHOOL RICHARD S. SUTTON RICHARD S. SUTTON UNITED STATES HISTORICAL DOCUMENTS INSTITUTE JAMES F. CORY LESLIE STEPHEN SAMUEL AUSTIN ALLIBONE CANTERBURY (ENGLAND). ST. DUNSTAN PARISH WILLIAM LANGLAND BRITISH LIBRARY NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

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REINFORCEMENT LEARNING IS THE LEARNING OF A MAPPING FROM SITUATIONS TO ACTIONS SO AS TO MAXIMIZE A SCALAR REWARD OR REINFORCEMENT SIGNAL THE LEARNER IS NOT TOLD WHICH ACTION TO TAKE AS IN MOST FORMS OF MACHINE LEARNING BUT INSTEAD MUST DISCOVER WHICH ACTIONS YIELD THE HIGHEST REWARD BY TRYING THEM IN THE MOST INTERESTING AND CHALLENGING CASES ACTIONS MAY AFFECT NOT ONLY THE IMMEDIATE REWARD BUT ALSO THE NEXT SITUATION AND THROUGH THAT ALL SUBSEQUENT REWARDS THESE

TWO CHARACTERISTICS TRIAL AND ERROR SEARCH AND DELAYED REWARD ARE THE MOST IMPORTANT DISTINGUISHING FEATURES OF REINFORCEMENT LEARNING REINFORCEMENT LEARNING IS BOTH A NEW AND A VERY OLD TOPIC IN AI THE TERM APPEARS TO HAVE BEEN COINED BY MINSK 1961 AND INDEPENDENTLY IN CONTROL THEORY BY WALZ AND FU 1965 THE EARLIEST MACHINE LEARNING RESEARCH NOW VIEWED AS DIRECTLY RELEVANT WAS SAMUEL S 1959 CHECKER PLAYER WHICH USED TEMPORAL DIFFERENCE LEARNING TO MANAGE DELAYED REWARD MUCH AS IT IS USED TODAY OF COURSE LEARNING AND REINFORCEMENT HAVE BEEN STUDIED IN PSYCHOLOGY FOR ALMOST A CENTURY AND THAT WORK HAS HAD A VERY STRONG IMPACT ON THE AI ENGINEERING WORK ONE COULD IN FACT CONSIDER ALL OF REINFORCEMENT LEARNING TO BE SIMPLY THE REVERSE ENGINEERING OF CERTAIN PSYCHOLOGICAL LEARNING PROCESSES E G OPERANT CONDITIONING AND SECONDARY REINFORCEMENT REINFORCEMENT LEARNING IS AN EDITED VOLUME OF ORIGINAL RESEARCH COMPRISING SEVEN INVITED CONTRIBUTIONS BY LEADING RESEARCHERS

AN ACCOUNT OF KEY IDEAS AND ALGORITHMS IN REINFORCEMENT LEARNING THE DISCUSSION RANGES FROM THE HISTORY OF THE FIELD S INTELLECTUAL FOUNDATIONS TO RECENT DEVELOPMENTS AND APPLICATIONS AREAS STUDIED INCLUDE REINFORCEMENT LEARNING PROBLEMS IN TERMS OF MARKOV DECISION PROBLEMS AND SOLUTION METHODS

INCLUDES ARTICLES AS WELL AS NOTES AND OTHER FEATURES ABOUT MATHEMATICS AND THE PROFESSION

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