

Selecting Agent Definition



Selecting Agent Definition: Understanding the Driving Force of Evolution

Evolution, the grand tapestry of life's unfolding story, isn't a random process. It's shaped by a powerful force: the selecting agent. This blog post delves into the precise definition of a selecting agent, exploring its role in natural selection and offering clear examples to solidify your understanding. We'll unpack the concept, differentiate it from other evolutionary pressures, and clarify its significance in shaping the biodiversity we see today. Get ready to unravel the mysteries behind this crucial element of evolutionary biology.

What is a Selecting Agent? A Precise Definition

At its core, a selecting agent is any environmental factor or pressure that differentially affects the survival and reproductive success of individuals within a population based on their traits. In simpler terms, it's the thing that "selects" which individuals are more likely to pass on their genes to the next generation. This selection isn't conscious; it's a consequence of the interaction between an organism's characteristics and its environment. A selecting agent creates a selective pressure, favoring certain traits over others.

Types of Selecting Agents

Selecting agents can be broadly classified into biotic and abiotic factors.

Biotic Selecting Agents:

Predators: Predators exert strong selective pressure, favoring traits like speed, camouflage, or defensive mechanisms in prey. Animals with traits that increase their chances of escaping predation are more likely to survive and reproduce.

Competitors: Competition for resources like food, mates, or territory can be a powerful selecting agent. Individuals with traits that enhance their competitive ability are more likely to secure these resources and reproduce successfully. This can lead to character displacement, where competing species evolve distinct traits to minimize competition.

Parasites and Diseases: Parasites and diseases preferentially target individuals with weaker immune systems or other susceptible traits. Individuals with stronger resistance are more likely to survive and pass on their genes.

Mutualistic Partners: Even beneficial relationships can act as selecting agents. For instance, plants might evolve traits that attract specific pollinators, while the pollinators themselves evolve traits to better exploit the plant's resources.

Abiotic Selecting Agents:

Climate: Temperature, rainfall, sunlight, and other climatic factors exert significant selective pressure. Organisms with adaptations that allow them to survive and reproduce in specific climates are favored. This can lead to distinct adaptations in different geographical regions.

Natural Disasters: Events like floods, droughts, wildfires, and earthquakes can drastically alter the environment, favoring individuals with traits that increase their survival chances during or after such events. This can result in rapid evolutionary changes.

Resource Availability: The availability of food, water, shelter, and other essential resources influences which individuals survive and reproduce. Traits that enhance resource acquisition are strongly favored.

Geographic Features: Mountain ranges, rivers, and other geographic barriers can create isolated populations, leading to different selective pressures and potentially the formation of new species through allopatric speciation.

Selecting Agent vs. Other Evolutionary Influences

It's crucial to distinguish a selecting agent from other evolutionary forces. While genetic drift, mutation, and gene flow all contribute to evolutionary change, they don't actively select for specific traits. A selecting agent is the driving force behind adaptive evolution, leading to the development of traits that enhance survival and reproduction in a specific environment.

Understanding Selective Pressure

The concept of selective pressure is intrinsically linked to the selecting agent. Selective pressure

describes the intensity of the force exerted by the selecting agent. A strong selective pressure means that the selecting agent significantly impacts the survival and reproduction of individuals within a population, leading to rapid evolutionary change. A weak selective pressure might result in slower or less pronounced changes.

Examples of Selecting Agents in Action

Let's consider some real-world examples to solidify our understanding:

Peppered Moths: During the Industrial Revolution, the darker-colored peppered moths had a selective advantage over their lighter counterparts due to pollution darkening tree bark (the selecting agent). This classic example showcases how a change in the environment can dramatically shift selective pressure.

Antibiotic Resistance: The overuse of antibiotics has created a powerful selective pressure favoring bacteria with antibiotic-resistant genes. The antibiotic itself acts as the selecting agent, driving the evolution of resistant strains.

Darwin's Finches: The different beak shapes of Darwin's finches are a direct result of the selective pressures exerted by the availability of different food sources (seeds, insects, etc.) on the Galapagos Islands. Each food source acted as a selecting agent, favoring finches with beaks adapted to exploit that specific resource.

Conclusion

The selecting agent is the pivotal force behind natural selection, driving the evolution of life on Earth. Understanding its definition and the diverse ways it operates is fundamental to grasping the mechanisms of evolutionary change. By recognizing the various biotic and abiotic factors that exert selective pressures, we can better appreciate the remarkable diversity and adaptability of life.

FAQs

Q1: Can a single trait be influenced by multiple selecting agents?

A1: Absolutely. A single trait can be simultaneously influenced by multiple selecting agents, leading to complex evolutionary outcomes. For example, a plant's flower color might be influenced by pollinator preferences (biotic) and sunlight availability (abiotic).

Q2: Is artificial selection also driven by a selecting agent?

A2: Yes, artificial selection, where humans select for specific traits in domesticated animals and

plants, is also driven by a selecting agent – the human breeder.

Q3: How do we identify the selecting agent in a specific evolutionary scenario?

A3: Identifying the selecting agent often requires careful observation and experimentation. By analyzing the correlation between specific traits and survival/reproductive success in different environments, researchers can infer the role of various factors as selecting agents.

Q4: Can a selecting agent change over time?

A4: Yes, environmental conditions and interactions constantly change, leading to shifts in selective pressures. What was once a strong selecting agent might become less influential, or a new selecting agent might emerge.

Q5: Does the selecting agent always lead to adaptation?

A5: While selecting agents drive adaptation in many cases, it's not always a guaranteed outcome. Genetic drift and other factors can still influence the evolutionary trajectory even in the presence of a selecting agent.

selecting agent definition: SAP Sudipta Malakar, 2019-09-18 Demystifying SAP Business Automation and shape tangible use cases that add values to your organisation, Customers & Business DESCRIPTION The book has been written in such a way that the concepts are explained in detail, giving adequate emphasis on examples. To make clarity of the programming examples, logic is explained properly as well discussed using comments in program itself. The book covers the topics right from the start of the software using snapshots of starting the software and writing programs into it. The real-time examples are discussed in detail from simple to complex taking into consideration the requirement of IT consultants. Various sample projects are included in the Book and are written in simple language so as to give IT consultants the basic idea of developing projects in SAP. The examples given in book are user-focused and have been highly updated including topics, figures and examples. The book features more on practical approach with more examples covering topics from simple to complex one addressing many of the core concepts and advance topics also. KEY FEATURES Examples, problem solutions, and tips and tricks for daily practice are given in a simple manner. Learn the Troubleshooting & performance optimization techniques Get to know the Hard coding & Categorization & Recommendations SAP Business Workflow Introduction, Terminology, Function Modules and Reports are given in a simple form. WHAT WILL YOU LEARN SAP NetWeaver Gateway Realtime Case Study and demos on workflow for all the major SAP applications Step-by-step instructions for adapting data flows, agent determination, event definitions, and more SAP Workflow upgrade from 4.6 to 6.0 WHO THIS BOOK IS FOR SAP Consultants, SAP technical, Business analysts, Architects, Team Leads, Project Leads, Project Managers, Account Manager, Account Executives, CEO, CTO, COO, CIO, Sr. VP, Directors. Table of Contents 1. SAP Business Workflow Introduction 2. SAP Business Workflow Terminology 3. SAP Workflow with Function Modules & Reports 4. SAP Workflow Review Checklist 5. Demo- SAP Workflow for Credit Memos 6. Demo- SAP Business Workflow Substitution 7. Demo - When a FI Document is Parked then Trigger Custom Workflow 8. Demo - Goods Returns Workflow 9. Demo- Workflow for MRP Purchase Requisitions 10. Workflow Management System Best Practices 11. Earn Value - Overview 12. Basic Data Services Using SAP NetWeaver Gateway 2.0 13. SAP NetWeaver Gateway- Transaction Codes Usage and Purpose 14. SAP NetWeaver Gateway Basic Configuration 15. Demo- Workflow Trigger Using HR Tables 16. Demo- Workflow Trigger using Status Management 17. Demo- Leave Request 18. Demo-

Integration of Portal and SAP Workflow 19. Ê Demo- Integration of Workflow with ALE 20. Ê Demo- Attach link in send mail Step of a Workflow 21. Ê Case Study - Advance Workflow Design- Update Sales Document 22. Ê Case Study - SAP Workflow Upgrade from 4.6 to 6.0 23. Ê Quiz Session - SAP Workflow

selecting agent definition: Agent-Oriented Information Systems II Paolo Bresciani, Paolo Giorgini, Brian Henderson-Sellers, Graham Low, Michael Winikoff, 2005-05-10 Information systems have become the backbone of all kinds of organizations - day. In almost every sector - manufacturing, education, health care, government and businesses large and small - information systems are relied upon for - eryday work, communication, information gathering and decision-making. Yet, the in?exibilities in current technologies and methods have also resulted in poor performance, incompatibilities and obstacles to change. As many organizations are reinventing themselves to meet the challenges of global competition and e-commerce, there is increasing pressure to develop and deploy new technologies that are ?exible, robust and responsive to rapid and unexpected change. Agent concepts hold great promise for responding to the new realities of - formation systems. They o?er higher-level abstractions and mechanisms which address issues such as knowledge representation and reasoning, communication, coordination, cooperation among heterogeneous and autonomous parties, p- ception, commitments, goals, beliefs, intentions, etc., all of which need conc- tual modelling. On the one hand, the concrete implementation of these concepts can lead to advanced functionalities, e.g., in inference-based query answering, transaction control, adaptive work ?ows, brokering and integration of disparate information sources, and automated communication processes. On the other hand, their rich representational capabilities allow for more faithful and ?- ible treatments of complex organizational processes, leading to more e?ective requirements analysis and architectural/detailed design.

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usually, map onto persons. And while this theory foregrounds agents, persons, subjects and selves, it does this by theorizing processes that often remain in the background of such (often erroneously) individuated figures: ontologies (akin to culture, but generalized across agentive collectivities), interaction (not only between people, but also between people and things, and anything outside or in-between), and infrastructure (akin to context, but generalized to include mediation at any degree of remove).

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papers, presented together with a full-length invited talk, were carefully reviewed and selected from 120 full submissions. The contributions have been organized according to ten topical sections on programming techniques; programming tools; separation logic; gradual typing; shared-memory concurrency and verification; process calculi; taming concurrency; model checking and verification; weak-memory concurrency and verification; and types, inference, and analysis.

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the latest research in the areas of information systems, enabling technologies, and business management, as well as potential applications in industries including education, finance, logistics, medical tourism, and IT services.

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International Workshop on Environments for Multiagent Systems, E4MAS 2006, held in Hakodate, Japan in May 2006 as an associated event of AAMAS 2006, the 5th International Joint Conference on Autonomous Agents and Multiagent Systems. The 15 revised papers presented were carefully reviewed and selected from the lectures given at the workshop completed by a number of invited papers of prominent researchers active in the domain. The papers are organized in topical sections on models, architecture, and design, mediated inte.

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selecting agent definition: Intelligent Multimedia Multi-Agent Systems Rajiv Khosla, Ishwar K. Sethi, Ernesto Damiani, 2013-03-09 Intelligent Multimedia Multi-Agent Systems focuses on building intelligent successful systems. The book adopts a human-centered approach and considers various pragmatic issues and problems in areas like intelligent systems, software engineering, multimedia databases, electronic commerce, data mining, enterprise modeling and human-computer interaction for developing a human-centered virtual machine. The authors describe an ontology of the human-centered virtual machine which includes four components: activity-centered analysis component, problem solving adapter component, transformation agent component, and multimedia based interpretation component. These four components capture the external and internal planes of the system development spectrum. They integrate the physical, social and organizational reality on the external plane with stakeholder goals, tasks and incentives, and organization culture on the internal plane. The human-centered virtual machine and its four components are used for developing intelligent multimedia multi-agent systems in areas like medical decision support and health informatics, medical image retrieval, e-commerce, face detection and annotation, internet games and sales recruitment. The applications in these areas help to expound various aspects of the human-centered virtual machine including, human-centered domain modeling, distributed intelligence and communication, perceptual and cognitive task modeling, component based software development, and multimedia based data modeling. Further, the applications described in the book employ various intelligent technologies like neural networks, fuzzy logic and knowledge based systems, software engineering artifacts like agents and objects, internet technologies like XML and multimedia artifacts like image, audio, video and text.

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selecting agent definition: Darwinian Archaeologies Herbert D.G. Maschner, 2013-06-29

Just over 20 years ago the publication of two books indicated the reemergence of Darwinian ideas on the public stage. E. O. Wilson's *Sociobiology: The New Synthesis* and Richard Dawkins' *The Selfish Gene*, spelt out and developed the implications of ideas that had been quietly revolutionizing biology for some time. Most controversial of all, needless to say, was the suggestion that such ideas had implications for human behavior in general and social behavior in particular. Nowhere was the outcry greater than in the field of anthropology, for anthropologists saw themselves as the witnesses and defenders of human diversity and plasticity in the face of what they regarded as a biological determinism supporting a right-wing racist and sexist political agenda. Indeed, how could a discipline inheriting the social and cultural determinisms of Boas, Whorf, and Durkheim do anything else? Life for those who ventured to challenge this orthodoxy was not always easy. In the mid-1990s such views are still widely held and these two strands of anthropology have tended to go their own way, happily not talking to one another. Nevertheless, in the intervening years Darwinian ideas have gradually begun to encroach on the cultural landscape in variety of ways, and topics that had not been linked together since the mid-19th century have once again come to be seen as connected. Modern genetics turns out to be of great significance in understanding the history of humanity.

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selecting agent definition: ECAI 2012 C. Bessiere, 2012-08-15 Artificial intelligence (AI) plays a vital part in the continued development of computer science and informatics. The AI applications employed in fields such as medicine, economics, linguistics, philosophy, psychology and logical analysis, not forgetting industry, are now indispensable for the effective functioning of a multitude of systems. This book presents the papers from the 20th biennial European Conference on Artificial Intelligence, ECAI 2012, held in Montpellier, France, in August 2012. The ECAI conference remains Europe's principal opportunity for researchers and practitioners of Artificial Intelligence to gather and to discuss the latest trends and challenges in all subfields of AI, as well as to demonstrate innovative applications and uses of advanced AI technology. ECAI 2012 featured four keynote speakers, an extensive workshop program, seven invited tutorials and the new Frontiers of Artificial Intelligence track, in which six invited speakers delivered perspective talks on particularly interesting new research results, directions and trends in Artificial Intelligence or in one of its related fields. The proceedings of PAIS 2012 and the System Demonstrations Track are also included in this volume, which will be of interest to all those wishing to keep abreast of the latest developments in the field of AI.

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post-proceedings of the 7th International Workshop on Argumentation in Multi-Agent Systems, ArgMas 2010, held in Toronto, Canada in May 2010 as a satellite workshop of AAMAS 2010. The 14 revised full papers taken from ArgMAS 2010 were carefully reviewed and improved during two rounds of revision. Also included are 4 invited papers based on presentations on argumentation at the AAMAS 2010 main conference. All together the 18 papers included in the book give a representative overview on current research on argumentation in multi-agent systems. The papers are organized in topical sections on practical reasoning and argument about action, applications, and theoretical aspects.

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selecting agent definition: *7th International Conference on Practical Applications of Agents and Multi-Agent Systems (PAAMS'09)* Yves Demazeau, Juan Pavón, Juan Manuel Corchado Rodríguez, Javier Bajo, 2009-03-08 PAAMS, the International Conference on Practical Applications of Agents and Multi-Agent Systems is an evolution of the International Workshop on Practical Applications of Agents and Multi-Agent Systems. PAAMS is an international yearly tribune to present, to discuss, and to disseminate the latest developments and the most important outcomes related to real-world applications. It provides a unique opportunity to bring multi-disciplinary experts, academics and practitioners together to exchange their experience in the development of Agents and Multi-Agent Systems. This volume presents the papers that have been accepted for the 2009 edition. These articles capture the most innovative results and this year's trends: Assisted Cognition, E-Commerce, Grid Computing, Human Modelling, Information Systems, Knowledge Management, Agent-Based Simulation, Software Development, Transports, Trust and Security. Each paper has been reviewed by three different reviewers, from an international committee composed of 64 members from 20 different countries. From the 92 submissions received, 35 were selected for full presentation at the conference, and 26 were accepted as posters.

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1. to choose in preference to another or others. 2. to make a choice; pick. 3. chosen in preference to another or others; preferred. 4. choice; of special value or excellence. 5. careful in choosing; discriminating. 6. carefully chosen; exclusive: a select group. se•lect'ness, n. se•lec'tor, n.

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to make a choice; pick. chosen in preference to another or others; selected. of special value or excellence; choice. careful or fastidious in selecting; discriminating. carefully or fastidiously ...

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