Agent in Philosophy From the perspective of philosophy, is Origin of Al Agent artificial entities capable of agency? Introduction of Agents into Al Symbolic Agents Reactive Agents Background Reinforcemnet Learning-Based Agents Technological Trends in Agent Research Agents with Transfer Learning and Meta Learning Large Language Model-Based Agents Autonomy Why is LLM suitable as the primary component of an Agent's brain Reactivity Pro-activeness Multi-tuen Interactive Conversation Natural Language Interaction High-Quality Natural Language Generation Intention and Implication Understanding Pretrain Model Linguistic Knowledge Knowledge in LLM-Based Agent Commonsense Knowledge Knowledge Professional Domain Knowledge Editing Wrong and Outdated Knowledge Potential Issues of Knowledge Mitigating Hallucination Raising the Length Limit of Transformers Brain **Memory Capability** Summarizing Memory Compressing Memories with Vectors or Memory Data Structures Automated Retrieval Memory Retrieval Interactive Retrieval Reasoning Plan Formulation Planning Plan Reflection Unseen Task Generalization Transferability and Generalization In-context learning Continual Learning The Birth of An Agent: Textual Input **Construction of LLM-Based** Agents Visual Encoder Visual Input Query Based Learnable Architetrue Projection Based Perception Cascading Manner **Auditory Input** Transfer Visual Method Tactile Other Input Gestrues 3D Maps **Textual Output** Learning Tools Tools **Using Tools** Making Tools Action Cost Efficiency The Potential of LLM-Based Agents for **Embodied Action Generalization Embodied Actions** Embodied Action Planning Obeservation **Embodied Action** LLM-Based Embodied Actions Manipulation Navigation Prospective to the Embodied Action Web Scenarios Task-Oriented Deployment Life Scenarios Innovation-Oriented Deployment Single Agent Deployment Lifecycle-Oriented Deployment **LLM-Based Agents** Disordered Cooperation Cooperative Interaction Ordered Cooperation Multi-agent Interaction Agents in Practice: Harnessing Al Adversarial Interaction for Good Quantitative Feedback Feedback Types Qualitative Feedback Instructor-Executor Paradigm Education Applications Health Human-Agent Interaction Other Applications **Empathetic Communicator** Equel Partnership Paradigm Human-Level Participant Input Bahaviors Individual Behaviors Internalizing Behaviors Output Behaviors Socail Behavior Positive Group Behaviors **Group Behaviors Neutral Group Behaviors** Behavior and Personality Negative Group Behaviors Cognition Ability Personality **Emotion Intelligence** Character Protrayal Text-Based Environment Visualization Socail Enviroment Virtual Sandbox Environment Extensibility **Agent Society: From** Individuality to Sociability Sensory Perception and Processing Physical Environment **Motion Control** Open Persistent Key Properties and Mechanism Situated Organized Organized Productive Cooperation Propagation in Socail Networks Society Simulation Insights from Agent Society Ethical Decision-Making and Game Theory Policy Formulation and Imrovement Unexpected Socail Harm Stereotypes and Prejudice Ethical and Social Risks Privacy and Security Over-reliance and Addictiveness LLM Research -> Agent Research Mutual Benefits between LLM Research and Agent Research Agent Research -> LLM Research Success Rate of Task Completion Utility Foundational Capabilites Efficiency Language Communication Proficiency Cooperation and Negotiation Abilities Sociablity Role-Playing Capability Evaluation for LLM-Based Agents Honesty Values Harmlessness Adapting to Specific Demographics, Cultures and Contexts Continual Learning Ability to Evolve Continually **Autotelic Learning Ability** The Adaptability and Generalization to Discussion New Environments Adversarial Robustness Security, Trustworthiness and Other Potential Risks of LLM-Based Agents Trustworthiness Misuse Other Potential Risks Unemployment Threat to the Well-Being of the Human Pre-determind Scaling Dynamic Scaling Scaling Up the Number of Agents Increasing Computation Burden Potential Challenges Distorted Information Propagation Difficulty of Coordinating The Debate over Whether LLM-Based Agents Represent a Potential Path to AGI From Virtual Simulated Environment to Open Probelms Physical Environment Collective Intelligence in Al Agents LLM-Based Agent as a Service