<<神经信息工程研究前沿>>

图书基本信息

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内容概要

《国际科技发展前沿丛书：神经信息工程研究前沿》从“脑机接口及临床应用”、“认知计算与控制”、“神经信息获取、检测与处理”、“神经教育信息工程”和“运动假体神经自主控制”等五个专题阐述重要科学问题，探讨关键技术，总结研究成果，阐述当前热点，展望未来趋势：分享本次会议的成果，相信对广大科技人员和科研决策者具有现实的参考价值，期望能促进同行的交流，进一步推动该领域的发展。

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书籍目录

神经信息工程前沿现状与展望——2011神经信息工程研究前沿国际研讨会综述 一、特邀报告 利用意念控制机器——神经工程技术在运动功能重建和脑伤治疗方面的未来趋势 心—脑科学研究前沿——神经工程 二、脑机接口及其临床应用专题 运动学习和功能康复中脑皮层神经活动的适应性 浙江大学求是高等研究院脑机接口研究进展 植入式神经接口和微型生物传感器的研究 人脑单神经元信号对外部设备的意念控制 三、认知计算与控制专题 Cognitive Computation：The Ersatz Brain Project 智能车辆的视觉认知计算 四、神经信息获取、检测与处理专题 通往认知脑机接口 连接大脑的神经技术：挑战与机遇 光学脑功能成像研究和成果转化 稳态视觉诱发电位在脑机接口中的应用 五、教育神经信息工程专题 教育神经工程对计算智能的需求 神经教育工程：教育发展的新时代 教育神经工程中的社会情绪能力评价 六、神经控制与运动修复专题 智能机械手Smart Hand的设计及实验评估 绕过损伤的脊髓：用皮层控制的功能电刺激实现上肢的抓取功能 多功能上肢假肢的仿生控制 基于面部运动区和Wernicke区皮层微电极阵列信号的单词发音分类 七、青年学者专题 mGRASP技术“绘制”大脑环路 灵巧假肢设备的神经控制 光基因技术静息位置细胞活动中的PV中间神经元 面向神经假体和神经机器人的大脑微刺激 基于近红外功能成像技术的脑机接口 神经集群活动的低维表征

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章节摘录

版权页： 插图： Brain "hardware" is glacially slow in comparison.The basic nerve cells-neurons-rarely operate faster than 1,000 times a second,a million times slower than a silicon CPU.There are a whole series of essential biological mechanisms that make nerve cells noisy.Nerve cells are affected by many malign influences,from bad biochemicals,to mechanical shock,to viruses and bacteria.But brain hardware works in a continuous world,that is,instead of only one's and zeros,neurons can signal all the values between zero and their fastest response rate.The cerebral cortex processes information in huge chunks.Instead of 64 bits at a time,ten billion nerve cells can be working on the same problem at the same time. The hardware is so different that it is surprising that anyone ever thought they worked in the same way,but a lot of smart people did.The term "Artificial Intelligence" [AI] was first used at a famous summer long gathering at Dartmouth in 1956.Most of those who thought about the problem of smart machines were there for at least part of the summer.Their goal was to mimic human intelligence with a machine: "AI's founders were profoundly optimistic about the future of the new field: Herbert Simon predicted that "machines will be capable,within twenty years,of doing any work a man can do" and Marvin Minsky agreed,writing that "within a generation… the problem of creating 'artificial intelligence'will substantially be solved" Alas,such was not to be. There was a consensus at that time that intelligent systems were forced by some unspecified law of nature to follow common universal rules of reasoning,and thinking.As a convenient consequence,if you understood machine intelligence well enough,you didn't have to spend time learning the details of human intelligence because they were the same.Since the Dartmouth participants were mathematicians,philosophers,computer scientists and engineers,they assumed intelligence in its general form worked how they thought,or,more accurately,how they thought they thought.

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《神经信息工程研究前沿》分享本次会议的成果，相信对广大科技人员和科研决策者具有现实的参考价值，期望能促进同行的交流，进一步推动该领域的发展。

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