Tactile Diagnostics and Encoding

Creating technologies to build a human interface to artificial touch sensors that is non-invasive, robust, cost-effective, and safe. The technology could be applied to restore touch to amputees with a prosthetic hand or make early diagnosis of nerve damage resulting from chemotherapy or diabetes.

More Information

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Competitive advantage

- Neural translation system uses trained artificial neurons based on nerve signal recordings from actual individual human tactile receptors encoding different aspects of object manipulation
- Enabling patients to experience touch without requiring extensive training or brain plasticity
- Unique pulsatile mechanical stimulation approach
- Technology is non-invasive, which makes it cheaper, safer, easier to test and get approved, easier to upgrade and repair, and avoids patients needing to make a decision about the risk/benefit of surgery

Impact

- Early detection of chemotherapy-induced peripheral neuropathy (CIPN) provides opportunities for treatment modification before permanent life-long damage ensues
- Providing tactile feedback could significantly improve acceptance of prosthetic hands by users and therefore improve rehabilitation outcomes and the quality of life of amputees

Successful outcomes

- Successfully conveyed tactile sense and supported direction judgements in small-scale trial
- Early evidence from rat studies that chemotherapy-induced nerve damage in non-symptomatic animals can be detected

Capabilities and facilities

- Skills in recording neu