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LAPORAN KEMAJUAN

PENELITIAN PASCADOKTOR

PENGEMBANGAN SISTEM KENDALI TANGAN PROSTETIK BERBASIS *ELECTROENCEPHALOGRAM* (EEG) BAGI PENDERITA CACAT AMPUTASI

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DAFTAR ISI

RINGKASAN

Tujuan penelitian ini berorientasi pada tangan prostetik yang dikenakan oleh penderia cacat amputasi yang dapat mengikuti keinginan pengguna sehingga seakan-akan robot itu merupakan bagian dari tubuh pengguna itu sendiri. Target khusus dari penelitian ini adalah sistem kendali tangan prostetik menggunakan sinyal otak (*electroencephalogram* - EEG) sehingga robot dapat mendeteksi keingginan penguna untuk melakukan gerakan tangan dasar yang sering digunakan manusia seperti menggenggam sesuatu, membuka tangan dan lain-lain. Untuk mewujudkan tujuan tersebut, penelitian ini dilaksanakan dalam dua tahun. Pada tahun pertama, penelitian ini manargetkan sistem pendektesian keinginan manusia untuk melakukan gerkan tangan dasar menggunakan sinyal EEG. Metode yang digunakan untuk pendeteksian mengikuti *state-of-the-art* dari metode *brain-computer interface* (BCI) yang terdiri dari ekstraksi fitur, proyeksi atau reduksi fitur dan kemudian diakhiri dengan klasifikasi. Penelitian ini mengusulkan metode baru menggunakan pengklasifikasi *extreme learning machine* (ELM). Untuk mendapatkan sistem yang baik, metode yang diusulkan diuji menggunakan data-data sinyal EEG orang sehat dan pasien cacat amputasi pada tangan. Sampai saat ini satu artikel telah dipresentasikan pada seminar internasional International Conference on Smart Green Technology 2018 dengan judul EEG Pattern Recognition for Hand Movement: A Review. Ektensi dari artikel pada seminar sudah disubmit ke jurnal internasional bereputasi terindeks Scopus Q2 International Journal on Advanced Science, Engineering and Information Technology.

Kata Kunci: *EEG* , tangan prostetik, pendeteksi keinginan

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