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A Sensory Feedback Device for Individuals with Prosthetic Legs

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This device has been developed to provide individuals the feedback signal which they have lost due to leg amputation. Supplying the individual with this signal reassures them that contact with the ground has been made, maintained, and that the individual's weight can be shifted to the leading leg. By providing this signal some of the hesitation that they otherwise exhibit when walking is removed.

The intended usage of this device is to restore an alternative feedback path, especially during the period of time when the individual is initially becoming acclimated with wearing their prostheses. The device also can provide valuable information to the prosthetic technician. This is accomplished by capturing data from both legs as the person takes several steps. This gait-analysis information can then be used by the technician, aiding them in the fitting and adjusting of the prosthetic to the individual.

The objective of designing this device was to provide more mobility to the end-user. This resulted in size, response time, ease of use, adequate memory storage, and power consumption being the critical design criteria. The design is a four-channel device capable of capturing signals from the heel and toe of both feet, processing, storing, and outputting the appropriate signal information to the individual.