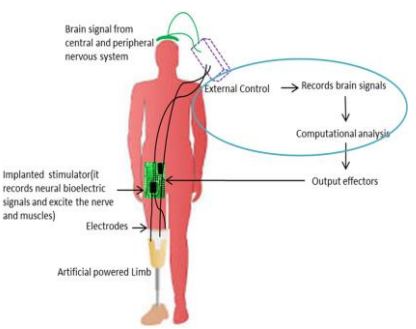
NeuralFMC

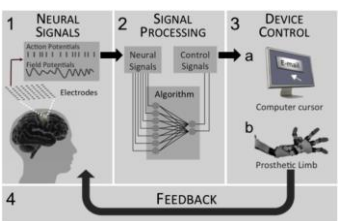
신경신호 처리를 위한 **USB3.0** 지원 플랫폼

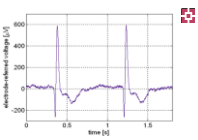
2018년5월
www.future-ds.com

퓨쳐디자인스템
Future Design Systems

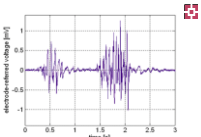
배경



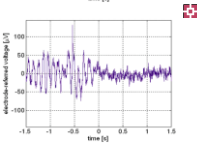




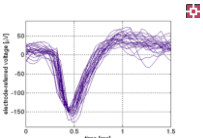
- 심전도: ECG/EKG (Electrocardiograms)
  - uV
  - 0.1~100Hz



- 근전도: EMG (Electromyograms)
  - mV
  - 250Hz~7.5Khz

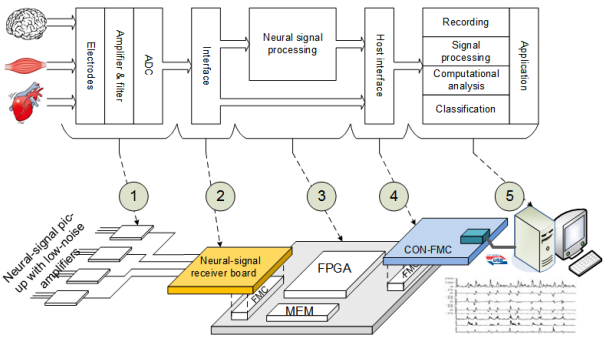


- 뇌파: EEG (Electroencephalograms)
  - uV



- 피질활동전위: cortical action potentials
  - uV

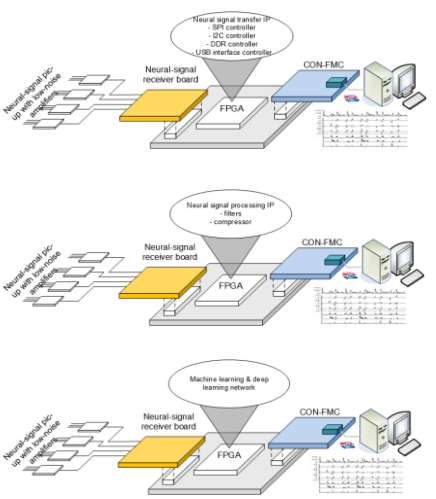
플랫폼 개요



- (1) ADC board
  - Intan RHD2000 사용칩셋 모듈
  - 0.1Hz-50Hz, 100Hz-20Khz
  - +/-5mV input
  - upto 30kSamples/sec
  - 16-bit
- (2) Interface board
  - High-speed SPI (24Mhz SCLK)
  - FMC board
- (3) FPGA board
  - FMC 지원 사용 보드
- (4) Host interface board: CON-FMC
  - USB3.0
  - FMC board
- (5) System control SW
  - Windows & Linux device driver
  - User level C API
  - Real-Time preview

Note: Intan's biological sensor uses invasive method, so that this platform will be used for limited area.

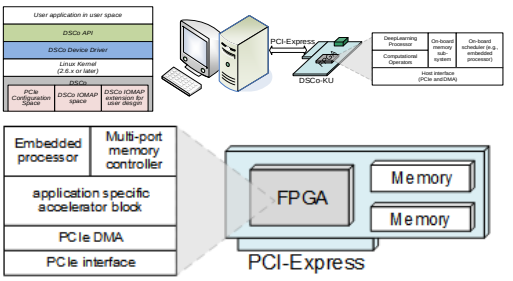
Production roadmap



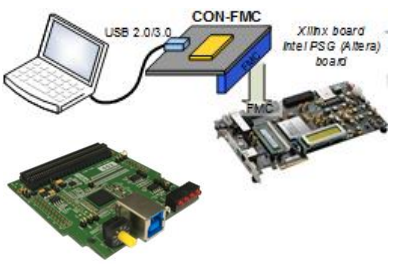
- Phase 1: 2018 Q3
  - 플랫폼 개발
- Phase 2: 2018 H2
  - 신경신호 처리 하드웨어: Filter, compressor
- Phase 3: 2019 H1
  - 신경신호 처리 하드웨어: Machine learning, deep learning
  - non-invasive product
- Phase 4: 2019 H2
  - 신경신호 합성

주생산품

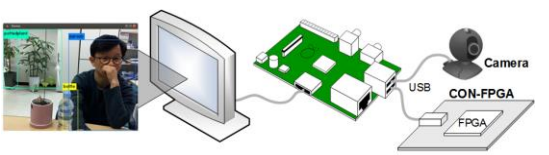
- DeepAccel (Deep-learning accelerator)



- CON-FMC (Interface board for off-the-shelf FPGA board)



- DeepLearning



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