minoTour: real-time data analysis for nanopore sequence data

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1. ABSTRACT

minoTour is a platform for real-time monitoring, analysis and interpretation of sequence data streamed from the Oxford Nanopore miniION sequencing device, including metrics describing sequence quality and also alignment to a reference genome where appropriate. miniTour comprises a Web Browser interface into a relational database of miniION sequencing data captured in real-time and includes a Graphical User Interface to assist configuration of data upload. miniTour can analyse data both pre and post base calling, can remotely notify users of key events during sequencing and exploit novel sequencing features made possible for the first time by miniION devices including direct control of the device in real-time; enabling 'run until' experiments. miniTour is open source software, freely available on all major operating system and community development is encouraged. At London Calling 2016 we will demonstrate miniTour monitoring and analysing miniION sequencing and controlling the miniION sequencer in real-time.

2. Graphical User Interface

minoTour now includes a simple to use GUI to easy configuration and upload of sequencing run data into the miniTour mySQL database

Other new features include batching of BWA alignments resulting in significant speed improvements

3. Run Summaries – Read Numbers and Rates

A wide range of summary information about each sequencing run is available as the run is progressing, including statistics on numbers of and lengths of reads along with sequencing rates.

4. Pore Activity and Read Quality

minoTour enables nanopore activities and read quality to be monitored in real-time

Users can setup Twitter alerts for important run events such as when a specific coverage level is reached

5. Alignments to Reference Genome

minoTour can generate summary plots for mapping reads to a reference genome using reads that have been basecalled using metricore.

Raw pre-basecalled reads can also be aligned using dynamic time warping of read events data against a putative reference event trace

6. Remote control of miniION runs

minoTour can remotely control the miniION, starting and stopping runs, renaming experiments, and even monitoring channel states whilst runs are progressing

7. Anytime, anywhere...

Responsive web technology enables to miniTour web service to be accessed from PCs, laptops, tablets and smartphones

8. Ask for a Demo @ LC2016!

9. Availability

minoTour can be downloaded from https://github.com/minoTour/minoTour

A hosted miniTour service is also available at http://minotour.nottingham.ac.uk/

For access contact Matt.Loose@nottingham.ac.uk

See also: Real time selective sequencing using nanopore technology. Matthew Loose, Sunir Malla, Michael Stout. BioRxiv Feb 2016