Mobile Keyboard Optimized for Two Fingers

Takala, Jaakko (School: Paivola School of Mathematics)
Sova, Vihtori (School: Paivolan Matematiikkalinja)

Currently, the most commonly used mobile keyboard layout is QWERTY which was designed for ten fingers in the 1870s. The biggest flaws of QWERTY in the mobile environment are its small key size and non-optimal positioning of letters. Most young people use two thumbs while typing on a mobile device. We designed and programmed a virtual keyboard optimized for two thumbs. We chose to create a six by five layout. Our keyboard layout was optimized for the English language. In our optimization, we used letter and letter-pair frequency data which had been collected from Leipzig Corpora Collection. We defined a quality rating based on our optimization criteria, which were high writing speed and minimization of finger movements. We created a program that randomly generates layouts and calculates a quality rating for them. Then we looked for common letter positions in the highest scoring layouts. We used these to fine-tune our randomization process until we ended up with our layout, PSTIEW. We used Java to program a virtual keyboard that uses PSTIEW layout and can be run on Android phones. Next, we will prepare our software for its eventual launch at the Google Play store. We compared PSTIEW layout against the QWERTY using computer simulation. PSTIEW layout shortened the sum of the finger trajectories by 13% compared to QWERTY even though PSTIEW has 40% larger keys than the QWERTY keyboard used in the simulation.

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