The Future of Knitting Machine Programming
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One of our goals at the Carnegie Mellon Textiles Lab is to improve the way knitting machines are programmed. We are doing this both by developing our own high-level design tools; and by creating the low-level infrastructure required to enable others to develop their own tools.

The core idea of our high-level tools is to enable knit programmers to specify what they want knitting machines to make without being distracted by the details of how the machine will make it. This has required us to develop a notion of machine knittability, along with various combinatorial search and heuristic algorithms to tackle the difficult problems of scheduling knit stitches to knitting machine needles.

Our low-level infrastructure work is far less complicated. We have specified a simple, text-based, assembly-language-like machine knitting format called "knitout"; and maintain translators from this language to various manufacturer-specific formats (and 3D yarn paths). Our hope is that having a simple output format for design tools (and -- for that matter -- input format for simulators) will allow more researchers to engage with the difficult problems of machine knitting and free them from worrying about learning the quirks of various machine-specific formats.

More information:
General:
   http://www.cs.cmu.edu/~jmccann
   http://textiles-lab.github.io
High-level tools:
   http://visual.knit.zone
   http://auto.knit.zone
Low-level format:
   https://textiles-lab.github.io/knitout/knitout.html
   http://db.knit.zone