

Title: A range of real time video processing on a dedicated low power video processor

Dr David Sinclair, Alphamosaic Ltd, Science Park, Milton Rd, Cambridge, UK, CB4 0WM. t. +44(0)1223 420003. www.alphamosaic.com, david.sinclair@alphamosaic.com

Alphamosaic is a fab-less video processor company. We would like to demo some of the computer vision applications that we have developed for our current chip (VC01). The chip is intended to be the processor of choice to go into cheap peripheral cameras in distributed vision systems (and is sufficiently low power to be run from powered Ethernet).

The applications we would like to demo are,

1. Real time **robust template** tracking. A set of sub-templates are tracked and a median flow filter is applied to their motions to give a robust motion estimate. The templates can be allowed to update themselves to cope with a degree of appearance change as an object moves.
2. Real time **shape context** type tracking. The notion that what gives a feature significance is its relationship to its neighbours is borrowed from the work on *shape contexts* and *pairwise geometric histograms* and applied to tracking. Real time feature detection is performed and constellations of features are tracked. The immediate neighbours of a feature are used to provide a canonical orientation for a feature constellation and then an *earth mover distance* is used to match the longer range members.
3. **General processor capability** demos. We can demo MPEG4 codecs, real time interactive morphing of a video stream and interactive games that use the camera tracking the environment as the joystick. There is also a web server available for our chip making communication with applications straightforward.