Aesthetic Computer '26: A Mobile-First Runtime for Creative Computing

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Summary

Aesthetic Computer (AC) is a mobile-first runtime and social network for creative computing that runs entirely in the browser. Its primary interface is a text prompt through which users navigate a namespace of 354 built-in interactive programs ("pieces") and 265 user-published works. Each piece is a single JavaScript (`.mjs`) or KidLisp (`.lisp`) file exporting lifecycle functions that receive an immediate-mode graphics API. The platform integrates social infrastructure—user handles, real-time chat, mood posts, live profiles—directly into the runtime. A pack system bundles pieces into standalone HTML files for offline distribution.

Statement of need

Creative coding platforms like Processing (Reas and Fry 2007), p5.js (McCarthy 2015), and Scratch (Resnick et al. 2009) have transformed how people learn and practice computational expression. However, they share common limitations: they assume desktop use, require managing project structures or IDEs, and treat social features as external services (separate websites, forums, or galleries).

AC addresses three gaps: (1) **mobile-first creative coding**—the prompt interface and touch-first input make creative computing accessible on phones and tablets; (2) **integrated social infrastructure**—handles, chat, moods, and profiles are part of the runtime, not a surrounding website; (3) **instant publishing**—a single `publish` command makes a piece available at a URL under the author's `@handle`.

The platform's interface is designed to function like a musical instrument: users discover memorizable paths through the namespace of commands and pieces, building fluency through play and improvisation rather than menu navigation.

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Architecture

The core runtime comprises four modules totaling approximately 63,000 lines:

- **Boot** (`boot.mjs`, 1,948 lines) — Parallel initialization of WebSocket module streaming, Service Worker caching, and IndexedDB storage.
- **BIOS** (`bios.mjs`, 20,935 lines) — Runtime orchestrator managing the 60fps loop, input routing (keyboard, touch, gamepad, MIDI), piece lifecycle transitions, and WebGL compositing.
- **Disk** (`disk.mjs`, 15,879 lines) — The complete API surface for pieces: graphics primitives, audio, input, UI components, networking, and storage.
- **KidLisp** (`kidlisp.mjs`, 15,161 lines) — Tree-walking evaluator for the embedded Lisp dialect (Scudder 2026).

Piece model

Each piece exports up to five lifecycle functions:

```
function boot({ wipe, screen, params }) {
  // Runs once when piece loads
}

function paint({ wipe, ink, circle, screen }) {
  wipe("navy")
  ink("pink")
  circle(screen.width / 2, screen.height / 2, 50)
}

function act({ event: e }) {
  if (e.is("keyboard:down:space")) { }
}

export { boot, paint, act };
```

Publishing and distribution

The `publish` command uploads a piece under the user's `@handle`. The `source` command forks any piece as a template. The `pack` command bundles a piece into a self-contained HTML file for offline distribution, blockchain minting, or archival. Custom domains (e.g., `notepat.com`, `kidlisp.com`) route to specific pieces via Netlify edge functions.

Research applications

The platform's 2,801 registered users, 16,244 KidLisp programs, 4,404 paintings, and 18,020 chat messages constitute a dataset for studying creative computing

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practices in a mobile-first, social context. The prompt-as-instrument interaction model offers a case study in alternative programming interfaces.

Assemblage

Written and produced by Jeffrey Alan Scudder. Tools used in the making of Aesthetic Computer and this paper include: JavaScript, Node.js, Vim, various LLMs (Claude, GPT, Gemini, etc.), fish shell, Git, Firefox, and a lot of coffee. Thanks to the AC community for creating the corpus and providing feedback, and to the 14 contributors to the open-source repository.

References

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