

# Adrien BERTRAND – Projects portfolio

Here is a selection of projects I have worked on, on my free time, over the past few years as of December 2022 (including ongoing projects).

You will find here a description of what they are, my role in them, and technologies involved.

## Websites

- **TI-Planet** – <https://tiplanet.org> (2011 – Present)  
Co-founder and co-administrator. Full stack developer. Sys-admin.  
Built around a forum enhanced with many custom features and online tools, TI-Planet is the French, and possibly worldwide, leading community about TI calculators, renowned for its active news portal and file archive. The website also features a wiki gathering information on TI calculators. Many major news articles are also available in English.  
As of Dec. 2022, we've had around 18+ million visits, 265k members, growing every year.  
**My role:** especially nowadays, it is mostly on the backend (co-sysadmin, Debian server), although I also like to create user-facing tools, thus involving front-end coding & design.  
**Technologies** (mostly): Apache, Nginx, Bash, PHP, MySQL, HTML/CSS/JavaScript, C, C++
- **MyCalcs** – <https://my.calcs.quest> (2016 – Present)  
Founder and administrator. Full stack developer. Sys-admin.  
Website for gathering graphing calculators collections from people around the world. Various API and platform integrations to have a database of hardware+software revisions of said calculators, and establish a calculator “digital museum”. Laravel rewrite planned.  
**My role:** both frontend and backend. Creation from scratch, and maintenance.  
**Technologies** (mostly): Apache, Nginx, Bash, PHP, MySQL, HTML/CSS/JavaScript, Bootstrap
- **Inspired-Lua** – <https://inspired-lua.org> (2011 – 2018)  
Co-founder and co-webmaster.  
This website, and particularly its wiki, is a well-known English resource for TI-Nspire Lua scripting beginners and experts, providing helpful tutorials, documentation, examples... It is linked from TI's official website on their TI-Nspire Lua pages.  
**My role:** initial setup of the site's parts, writing content (articles, documentation...)  
**Technologies:** WordPress, MediaWiki, HTML/CSS/JavaScript, Lua, TI-Nspire Lua
- **ToutMonExam + ECEBac + CCBac** – <https://toutmonexam.fr> etc. (2015 – Present)  
Co-founder and co-webmaster (with Xavier Andréani)  
Websites, aimed at French students, to help them by providing a database of past, present and future state exams information with dates, details, questions categories...  
**My role:** both front-end & backend: database design/architecture, main code, design...  
**Technologies:** PHP, MySQL, HTML/CSS/JavaScript (vanilla and with frameworks)

- **Other websites & online communities**

I have been involved in numerous online forums, and active and mature enough to be, on some, relatively quickly invited in the staff team, or even moderation.

I have also helped developed (both backend + front-end coding, design) personal sites.

## Web-based tools/apps

- **TI-Planet's Project Builder** – <https://tiplanet.org/pb> (late 2015 - present)

Creator. Full stack developer

This is a complex, although user-friendly, webapp on TI-Planet allowing users to create programming projects for their TI calculators, in languages like Basic, C, C++, ASM, Lua... The whole point of this is to show how easy and fun programming can be, as projects can be shared and cloned among users (if wanted), to encourage knowledge sharing... Currently, only one (but major) module of the project builder is implemented: C coding for the CE calculators, on both backend (server) and front-end (client) through a custom online IDE with real-time multi-user collaboration, syntax coloring, auto-completion... Users can simply code everywhere without having to setup a local "toolchain".

**My role:** Back-end and front-end programming, designing, promoting it...

**Technologies** (mostly): HTML/CSS/JavaScript, PHP, MySQL, C, Bash, TI-eZ80 calculators

- **Openspire** – <https://inspired-lua.org/openspire> (≈ 2016)

Co-creator (with Jim Bauwens)

This is an online *WISIWYG* interface (GUI) builder/editor that makes the user able to visually design GUIs for their TI-Nspire Lua scripts, easily – they do not need to know how to code in Lua, as the script is generated automatically by the editor. This is especially useful for teachers who want to spend time on creating content, not code.

**My role:** initial setup of the site's parts, writing content (articles, documentation...)

**Technologies:** HTML/CSS/JavaScript (Bootstrap, Angular), Lua, TI-Nspire Lua

- **Several other TI-calculators related projects**

I have also developed other online tools (by myself or with others), most of them on/for TI-Planet, integrated in the forum and other pages. For example:

- **CalcMaster** (HTML/CSS/JS, PHP, MySQL): interactive Q&A subsite about TI calculators
- **Calculator comparator** (HTML/CSS/JS, PHP, MySQL): interactive comparison tool
- **TI-Planet's API** (PHP, MySQL): provides a way for developers to interact with TI-Planet's file archive database (search, browse, get file information, etc.)
- **tivars\_lib** (PHP, C++, JS): Library/set of tools to interact with TI-(e)z80 calculator files. Written in both PHP and C++ (two different needs), and available in JS via *emscripten*.

- **JamLegend 3<sup>rd</sup>-party web apps** – *not available anymore* (≈ 2009)

**My role:** both front-end & backend: database design/architecture, main code, design...

**Technologies:** HTML/CSS/JavaScript, PHP, MySQL

## Desktop software

While I have made myself many small utilities, in Bash, Lua, PHP, sometimes Python, here are some more “advanced” software I’ve been involved in.

- **CEmu** – <https://github.com/CE-Programming/CEmu> (late 2015 - present)

Contributor

CEmu is a 3<sup>rd</sup>-party TI-84 Plus CE / 83 Premium CE calculator emulator focused on developer features. The core (eZ80 CPU + specific calculator hardware emulation) is programmed in C, and the rest (GUI etc.) in C++ with Qt.

While I’m not a core developer, I help on several other parts of the application.

Recently, I’ve added an automated testing tool, in C++, allowing CE native developers to write test suites for their programs which can run in an automated way with the core.

**My role:** testing, translating, helping with GUI design, coding some developer features

**Technologies:** C, C++, Qt

*Note: I’m also similarly involved in a 3<sup>rd</sup>-party TI-Nspire emulator, called “Firebird”.*

- **CE Toolchain** – <https://github.com/CE-Programming/toolchain> (late 2015 - present)

Contributor, CD/CI co-manager, releases co-manager

A third-party toolchain from the enthusiast community, targeting the CE TI calculators (eZ80 CPU based), initially based on the Zilog tools, but now using only open-source components like LLVM (custom community-made backend) for the compiler (C/C++) and fasmg for the assembler and linker.

**My role:** mostly CD/CI-related, automated testing framework, releases, documentation...

**Technologies:** C, C++, ASM, Make, Git, CD/CI via GitHub Actions.

- **nRemote** – <https://github.com/adriweb/nRemote> (mostly 2012)

Co-creator (with *Jérémy Anselme*)

This is an TI-Nspire calculator remote control software, especially useful for teachers, as it allows them to see the handheld’s screen from the app, and directly interact with it with a virtual keypad. Sequence of actions can be recorded and played back. nRemote also supports being connected to several handhelds at the same time (in particular with the TI-Nspire Navigator wireless setup), which is yet another classroom use case.

**My role:** Main programming

**Technologies:** Java

## Mobile/Tablet software

While recent websites and web-apps that I make are *responsive*, I've also made a few native (Objective-C) iOS apps between 2011 and 2014, for instance:

- **iResistor**  
Conversion to/from resistor values & colors, with additional info like tolerance, series...  
The app was quite popular in its category (*downloaded dozens of thousands of times*).
- **iExams**  
Allowed students to setup & organize upcoming exams with specific information about them. The app was able to sync with the native calendar.
- **TI-Planet**  
The official TI-Planet iOS app, that allowed users to read the latest news (via RSS), access the mobile version of the website, and talk with other members on the chat.
- **ISEN Colles**  
A little app for my class at ISEN while I was studying there, that allowed students to check for upcoming oral exams, providing details like location, date/time, etc.

## Embedded software

- **FormulaPro** – <https://github.com/adriweb/EEPro-for-Nspire/> (2012 – 2015)

Co-creator (with Jim Bauwens)

FormulaPro is one of the biggest TI-Nspire Lua scripts – it’s a graphical educational app about Electrical Engineering (and modular enough to embed any other type of data) providing over 700 categorized formulas integrated in a smart solver and tools.

The script is done in such a way that it’s working on more than just the handheld itself: it’s also fully working on the computer software and the TI-Nspire iPad app.

FormulaPro has been featured on several websites, including TI’s, and has been the project on which I’ve been nominated for the “Engineer of the year 2013” title (student category) by the French periodical “L’Usine Nouvelle”.

**My role:** Programming, testing, promoting it

**Technologies:** Lua, TI-Nspire Lua & Basic

- **Apple Watch & TI-Nspire CX ports of CEmu**

Those two apps I made were proofs-of-concept showcasing how the third-party TI CE calculator emulator’s core could run on a smartwatch as well as another (higher-end) TI calculator. No download is available, although videos showing them are on YouTube:

[https://youtu.be/xGh3T\\_o-E\\_Q](https://youtu.be/xGh3T_o-E_Q) and <https://youtu.be/DzpmJoQH0wI>

- **Many calculator programs**

I’ve started programming on TI calculators around ten years ago, during/for math courses, and haven’t really stopped since. In fact, coding on those platforms is what motivated me, not so long after, to get into more advanced, computer programming.

It’s worth noting that calculators easily qualify as “embedded” as they have a very small amount of RAM and processing power compared to almost any handheld device today.

Here are a few calculator programs I have made over the years:

- **Games:** Classics like Pong, Snake, Connect 4, 2D Tunnel (83+/84+ Basic), 2048 (CE C, Nspire Lua), and a bit more complex ones like Basketball, Doodle Jump, Breakout, FallDown, Flappy Bird, Tower Defense (Nspire-Lua), etc.
- **Math:** function analyzer, step-by-step calculus tools, interactive courses help, fractals drawer, etc.
- **Science:** chemical reaction analyzer, FormulaPro (Nspire Basic & Lua), eclipse schedules (83+/84+ & Nspire Basic), Physics engine demos (Nspire Lua), etc.
- **Utilities:** music editor (83+/84+ Basic, Nspire Lua), lowercase enabler (z80/eZ80 ASM), GUI frameworks (83+/84+ Basic, Nspire Lua), external hardware tools (83+/84+ Basic, Nspire Lua), multi-calculator chat etc.