

What Is New in L^AT_EX?

V. L^AT_EX on an iPad.

Foundation

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Introduction

I wanted to write an article on how to typeset math on an iPad. It soon became clear that I have to cover a lot of ground on *the iPad as a computer* before I can discuss L^AT_EX on an iPad. So this *Foundation* lays the groundwork for *Empire*, coming soon in these Notices.

Post PC Revolution

A few years back, computing was desktop-centric. To update the operating system, for back up, and for many other tasks, you had to connect your smartphone and tablet with a computer.

Tim Cook (Apple's CEO) coined the term "Post PC revolution" to describe the trend that a tablet is no longer a younger brother of a PC, but an equal partner; in fact, for many users, it may be the only computer they will ever need.

Why the iPad? Let me count the ways

There are three reasons why the iPad is the only tablet I'll discuss.

1. The iPad's market share is 68%. It is clearly the dominant tablet of more than a hundred on the market. (The market share of Android tablets is about 20%.)

2. Today, the iPad is the only tablet that is in an *ecosystem*. (Microsoft's Surface will soon be a part of the Windows ecosystem.) The iPad is just one device under iCloud along with the iPhone, the Mac desktops, and the Mac notebooks. I own an iPad, an iPhone, an iMac, and a MacBook Air. A picture I take on my iPhone instantly appears on

my iPad. I work on a TeX article on my iMac, and when I am away from home, I continue my work on my MacBook Air; there is no interruption, they are fully synchronized.

3. I am not familiar with any other tablet.¹

Isn't the iPad designed only for e-mail, to read news, and enjoy entertainment?

Certainly. While it has a dual-core CPU, it has a quad-core graphics chip so viewing videos and complex Web pages is quick.

The operating system (iOS 6) is designed to make performing these basic tasks very easy and intuitive. iOS masks the complexities of the underlying computer.

When she was good

To work on an article, Roth sits in front of his computer, in the complex folder hierarchy he finds `article.tex`, double clicks it to start the L^AT_EX implementation, edits it, typesets it. Then he prints `article.pdf`, proofreads it, and then he goes back to editing...

On the iPad, there is only a rectangular array of apps. No documents are visible. There may be folders containing more apps, but no folder in a folder. There are no Library folders, no Download folder. And no File menu containing the Print command! I have `article.tex` on my desktop, but how do I transfer it to the iPad? I plug in your thumb drive, but it does not work.

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¹At the T_EX User Group Conference in Boston this summer, there was a talk about Android Pads by Boris Veytsman: T_EX and friends on a Pad.

Here is what Steve Jobs said about the file system:

And eventually, the file system management is just gonna be an app for pros, and consumers aren't gonna need to use it."

File system, or lack thereof, sandboxing, file transfers

The file system, as we know it from desktop computers, is gone. In its place is an app-centric starting point. Touch the icon of an app and you are in business. When the app opens, you get access to the documents and settings of the app.

Ars Technica's John Siracusa described the goal of sandboxing as follows:

For example, a normal application run by a user has the ability to delete every single file owned by that user. Obviously, a well-behaved application will not do this. But if an application becomes compromised, it may be coerced into doing something destructive.”

FileApp Pro

To get started, plug the iPad into a desktop computer, download and start DiskAid on the computer; download and start FileApp (Pro) on the iPad. On the left panel of DiskAid, click on Apps, then on FileApp. The second pane now shows Imported Files, the right pane shows the files imported to the iPad. In FileApp, navigate to Imported Files. Anything you drag into the right pane of DiskAid, is copied to FileApp's Imported Files. So much for file transfer.

The screenshot displays the DiskAid application on an iPad. The interface includes a top navigation bar with a search field and a row of action icons: Refresh, Copy to Computer, Copy to Device, Create Folder, Delete, and Help. The main workspace is divided into two sections. The left section features a sidebar with a file tree containing 'root' and 'Apps'. The 'Apps' section is expanded, showing a list of installed applications such as Car Racing, Disc. Edge, Evernote, FileApp Pro, FileExplorer, Ignition, Storage HD, iTeX, Kindle, MahjongTowers, PlainText, PrintDirect, PS Touch, Skype, Tex Touch, TeX Writer, Texpad, and TeXtrac. The right section shows the contents of the selected 'A note' folder, listing files like newlattice.sty, note.aux, note.dvi, note.log, note.pdf, note.tex, and note.synctex.gz. The bottom status bar indicates 'iPad Connected' and 'Free Space 9.1 GB'.

Of course, for file transfers I should also mention the ubiquitous Dropbox. Download it for the iPad, sign in (as you did for your desktop Dropbox), that's it.

When I first wanted to print from my iPhone, I realized that there is no print command. However, lots of apps would do the job. In fact, searching for “print” in the App Store, I discovered over 600 apps; many of them print, utilizing my desktop computer.

JUNE/JULY 2011

They can use any printer connected with your desktop computer. They wirelessly connect to your computer and print with its help.

If so many apps can help me out with printing, how come iOS does not? Read the comments to articles about iOS printing; I was not the only one confused.

If the iPad is the poster child of the Post PC Revolution, its printing solution cannot involve desktop computers. Apple introduced the appropriate technology; they named it AirPrint. The idea is simple: the iPad collaborates with the printer.

Of course, for this you need a wireless printer that is AirPrint aware. Apple lists all the AirPrint aware printers:

<http://support.apple.com/kb/ht4356>
as of this writing, over 300.

If you are lucky and have one of these printers, test it. Open an e-mail and touch the Action icon (here it is the Reply icon); this offers you the options: Reply, Forward, and Print. Touch Print, Printer Options appears, and you can choose how many copies and on which printer. (Lots of apps provide more choices, such as page range.) Choose the printer and print. For a second test, open a Web page in Safari. There is only one difference: the action icon is a curved arrow in a rectangle.

As a third test, open the Drudge Report. It has the familiar Action icon, we are in business. Finally, open the Politico app, read the news and look for an action icon. There is none.

So to use AirPrint, you need an AirPrint aware printer and an AirPrint aware app! For the time being, these are rather severe restrictions.

Text Editors

Many of us edit \LaTeX documents in text editors more sophisticated than the text editor that comes with the \LaTeX implementation. Some thoughts on iPad text editors:

First, writing about apps is like shooting at a moving target. While I was writing about an app, it went through four versions. Adding features, removing defective ones. This is especially true of the \LaTeX implementations I will write about in the next article. Some have no documentation. One has a single page, explaining why it can only do \TeX , not \LaTeX ; in fact, it can do \LaTeX .

Second, there are so many text editors, well over 200...

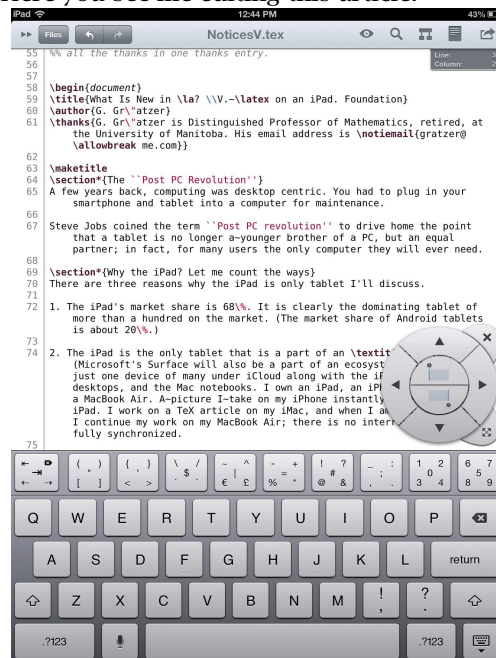
Take a look at the table at <http://bretttterpstra.com/ios-text-editors/> This table is a 50×31 matrix, each row representing a text editor, each column representing a feature (such as Search and Replace). The entries are Yes or No. Hovering over the name of a text editor, you get a listing of additional features and the App Store information.

Third, keeping the iPad horizontal, the keyboard gobbles up too much real estate. Keeping it vertical, the keyboard is less intrusive, but the keys are smaller. If you want to do serious work on the iPad, buy a keyboard.

Fourth, the iOS's touch text editing is nice, but it lacks a feature crucial for text editing: moving the cursor a character ahead or back. (Of course, Bluetooth keyboards have cursor keys!) Text editors offer a variety of solutions, for instance, finger swiping.

I will discuss briefly a very sophisticated text editor: Textastics. If you want Syntax Highlighting, Search and Replace, and Text Expander, this is your only choice.

Here you see me editing this article:



You can see the extra keyboard row and the cursor navigation wheel (which appears with a two finger tap—finger swipe also moves the cursor). It comes with an excellent user manual. (Textastics can also perform a number of non-editing tasks, such as zipping and unzipping files.)

Textastics has no Mac version. And if you spend time shaping it to your liking, then you would like the same tamed editor for all your work. The good news is: it's coming. I can hardly wait to see it.

Onward

I hope I have convinced you that the iPad is a computer. So what we need now are some \LaTeX implementations on the iPad computer.

Acknowledgments

Drafts of this article were read and commented on by a number of experts. I am grateful, in particular, to Alexander Blach, Richard Koch, Scot Mcphee, and Jonathan Weisberg.