Papercode: Generating Paper-Based User Interfaces for Code Review, Annotation, and Teaching Priyan Vaithilingam, Julia M. Markel, Philip J. Guo

How can we generate a paper-based UI that supports code review, annotation, and teaching? To address this question, we developed Papercode, a system that formats source code for printing. Users can interact with that code on paper, make freehand annotations, then transfer annotations back to the computer by taking photos with a phone camera. Papercode optimizes code for on-paper readability with tunable heuristics such as code-aware line wraps and page breaks, references to function and global definitions, moving comments and short function calls into margins, and topologically sorting functions in dependency order.





Example page of source code rendered with Papercode

				QR Code Take photo of page
pytutor.ts (ExecutionVisualizer)		11/49		on-paper pen annot
Trace.length) {	494 // weird special case for something	ike:		with original codeb
	<pre>495 // e=raw_input(raw_input("Enter some 500 // fail-soft with out-of-bounds</pre>	hing:"))		
	startingInstruction values:			Comments
Trace.length) { ace.length - 1;	assert : page 47, line 4120			To save vertical spa comments pushed
curTrace.length); h;				sidebar; longer bloc comments optional
{				
caught_exception') {				
		•		Sidebar
	523 // set to first error step if relevan that's more informative	it since		Augmented metada
<pre>// gigantic hack!</pre>				
				Function and g
	•			reference locat
	updateOutput : page 6, line 680 redrawConnectors : page 5, line 779			Allows user to quick
	try_hook : page 3, line 386			to the name where c
	addToBreakpoints : page 6, line 557			and referenced vars
rtedBreakpointsList);	removeFromBreakpoints : page 6, line 564			
rtedBreakpointsList);				
	assert : page 47 line 4120 assert : page 47, line 4120			Function start
	770 // ignore redundant calls			Quick glanceable m
	updateOutput : page 6, line 680			for function start po
		•		
			••••	Syntax highligh
				line wrapping



