

Spelunking through JPEG in Racket

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Theses

We should work with JPEG and other media from safe languages

Our languages should understand the structure of JPEG

Guilers and Racketeers should steal more code and ideas from each other

An idiot in racketland

A live demo, in which I make a dog's dinner
of the fine DrRacket

```
> (jpeg->bitmap "test.jpg")
```



```
#lang racket
```

```
;; racket-jpeg
```

```
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```

glitch or no?

```
> (jpeg->bitmap "test.jpg")
```



>


```
(define jpeg (read-jpeg "/home/wingo/src/racket-jpeg/test.jpg"))  
(define pic (jpeg->bitmap jpeg))  
(define rgb (bitmap->rgb pic))  
(define re-encoded (rgb->jpeg rgb))
```

Welcome to [DrRacket](#), version 6.5 [3m].

Language: `racket`, with `debugging`; memory limit: 128 MB.

```
> (jpeg->bitmap re-encoded)
```



```
> |
```

Lessons learned?

DC component: Things mostly just work

AC components: Lots of details...

Easy

logand / bitwise-and

1+ / add1

match differences

module differences

Lovely

Background expansion in DrRacket

Bitmaps in DrRacket

Packages very nice

struct

```
(module+ test ...)
```

Chucklers

Same problem Guile has when printing large data

(It prints large because structs, equal?, and tests)

Head-scratchers

bytevector-s16-ref with endianness?

Why are bytes so stringy?

What pronoun to use for struct instances?

Port argument to write-bytes optional?
(Compare to R6RS)

No embedded array literals?

Why no right-click in DrRacket?

Gnarlies

No generic array facility

math/array weird

array-map lazy but not documented as such

Unfolds over arrays hard

Reloads versus incremental dev

Summary

Happy hacking!

<https://github.com/wingo/racket-jpeg>

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