Jan12

Friday, January 12, 2018 2:17 PM

After C and D talked to M at JMM

(Mike showed us a bit of how to do encode decode things in Coq and emacs)

Showing $\mathrm{decode}(\mathrm{code}(g(a), c))$ are Htpy equiv $\mathrm{decode}(\mathrm{code}(f(a), c))$

remember $\mathrm{code}(g(a), c) = (g(a) =_C c)$ and $\mathrm{code}(f(a), c)) = \sum_{a':A} (f(a) =_B f(a')) \times (c =_C g(a'))$

need to show decode is consistant / natural

$r : (g(a) =_C c)$

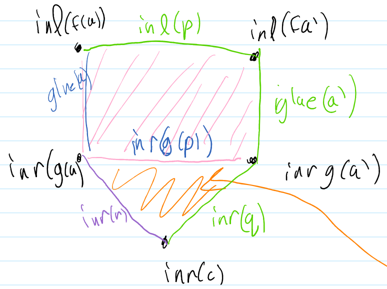
$p : (f(a) = f(a'))$

Note, because f is injective, p implies $\exists\, p' : (a = a')$. b.c. B is a set, $ap_f p' = p$. So we'll treat p as a path in A

$q : (c =_C g(a'))$

$\mathrm{decode}(r) = ap_{inr}(r)$ $\quad inr(r)$ (switching up notations)

$\mathrm{decode}(p, q) = inr(q) \circ glue(a') \circ inl(p)$



glue(p)

we get this circle of things in C, but thats a set so it must be filled in

trying a new one ourselves

lets try $ap_{decode}(ap_{code}(glue(a), inl(b)))$

Need to show $\mathrm{decode}((\mathrm{code}(f(a), b)) = \mathrm{decode}(\mathrm{code}(g(a, b)))$

$\mathrm{code}(inl(f(a)), inl(b))$

by def

$\mathrm{code}(f(a), b) = $ P.O.

$$\begin{tikzcd}
\sum_{\alpha:A} (f(a) = f(\alpha)) \times (b = f(\alpha)) \arrow[r, "\gamma"] \arrow[d, "\lambda"] & (f(a) = b) \arrow[d] \\
\sum_{\alpha, \alpha':A} (f(a) =_B f(\alpha)) \times (b =_B f(\alpha')) \times (g(\alpha) =_C g(\alpha')) \arrow[r] & \mathrm{code}(inl(f(a)), inl(b))
\end{tikzcd}$$

We almost decided that $p : \mathrm{code}(f(a), b)$ must come from lower left corner which tells us which decode rule to use