He Jifeng

Would you like to write to the editor of 'Theoretical Computer Science'? Send a copy to Rick Hehner too.

I look forward to seeing an outline of your own paper.

Tony

With Compliments
Dear TONY:

In the paper "a more complete model of communicating processes," the definition of hiding in the uninterruptible version does not satisfy the condition (P1) in the definition of process, i.e., it is inconsistent.

For example, let P be a process defined as

\[
p = \langle a \rangle \land \text{present} = \{a, o\}
\]

\[\lor \text{past} = \langle a, o \rangle \land \text{present} = \{b, o, c, i\}\]

\[\lor \text{past} = \langle a, o \rangle \land \text{past} = \langle b, o \rangle \land \text{present} = \{\}\]

\[\lor \text{past} = \langle a, o \rangle \land \text{past} = \langle c, i \rangle \land \text{present} = \{\}\]

(i.e., \( P \in \{a, o \rightarrow (b, o \rightarrow \text{stop} \mid c, i \rightarrow \text{stop})\} \))
from the definition of chan b in P given in that paper it follows that

\[ \text{chan } b \text{ in } P : \quad \text{part} = \langle \rangle \land \text{present} = \{ a \downarrow 0 \} \]

\[ V \text{ part} = \langle a \downarrow 0 \rangle \land \text{present} = \{ c \downarrow 0 \} \]

\[ V \text{ part} = \langle a \downarrow 0 \rangle \land \text{present} = \{ \} \}

hence \[ \langle a \downarrow 0 \rangle \land \langle c \downarrow 0 \rangle \in \text{past} ( P ) \text{, but } \]

from \( P )\) we should have \[ \langle a \downarrow 0 \rangle \land \langle c \downarrow 0 \rangle \in \text{past} ( P ) \text{.} \]

Furthermore, suppose that

\[ P \triangleq \mu p . \ b \downarrow o \rightarrow p \]

(due to W.A. Ronco)

then we have

\[ \text{chan } b \text{ in } P : \quad \text{part} = \langle \rangle \land \text{present} = \{ \} \}

(i.e., \( \text{chan } b \text{ in } P = \text{STOP} \)?)
Moreover

\[
\text{chan } b \text{ in } P \implies (\exists s. P \triangleright \text{past} : s) \land \\
\text{part} = s \setminus b \land \text{present}. b = \emptyset
\]

\[
\text{chan } b \text{ in } P \implies \text{false}
\]

hence we conclude that the hiding theorem
can't be proved from the uninterruptible version
without using the theorem's antecedent.

\[
\exists f. \# \text{part}. b < f(\text{past} \setminus b)
\]

Perhaps we can define \( \text{chan } b \text{ in } P \alpha \)

\[
\exists \rho, M . . P \triangleright \text{past} : \rho ; \text{present} : M \land \text{part} = \rho \setminus b \\
\land \text{present} = M \setminus b
\]

\[
\forall \rho, \forall n. \exists \alpha, M . . \# n \geq \alpha \land \alpha. \beta = \delta
\]

\[
\land P \triangleright \text{past} : \rho \setminus \beta ; \text{present} : M \land \alpha \setminus \beta \leq \text{past}
\]
The second term in the above definition describes
the basic fact that after a process engages
the infinite internal communications, there will
be no restriction on its behavior past.

Now Jeff, Sanders and I are interested
to work out a new model (based on \( R \)
or \( \mathcal{F} \)).

He Jifeng