Profiles, and Components on Subdomains: Testing,

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For analyzing X, "the same" must be relative to X.

- Select one test point from each subdomain.
- Choose subdomains whose points are "the same."

All non-random testing methods are subdomain methods.

A program input space can be decomposed into subdomains:

Subdomains and Testing
Operational Profile
Failure Rate: $\lambda \approx \frac{n - 1}{\approx n - 1}$

The dreaded "spiky" profile
Measurements on \( A \) and \( B \) at component development time allow calculation for \( W \) at system design time.

Component Reliability Theory
where $c$ is the component function.

$$\frac{|\{ \Omega \in (z) \in S \}}{\Omega \in S} \bigcap_{u}^{n} \bigcap_{i=1}^{m} = ^{i} \mathcal{K}$$

For arbitrary output profile-Transformation Mapping $\Gamma$

$$(^{i} f - 1)^{n} \bigcap_{u}^{n} = \mathcal{R}$$

The component reliability is:

Reliability Mapping $\Gamma$

For n subdomains input profile $p = \{ y_1, y_2, \ldots, y_n \}$.
$966.96 = (100 - 1.6) + (0 - 1) + 1.01$

Reliability of A alone:

Input profile to A: $> 3.1, I \leq 6 <$

Failure rates $f_1 = 0.01, f_2 = 0, f_3 = 0.001$

$S_1 = \{ 0 < u | u \} = \varepsilon_{1}, S_2 = \{ 0 > u | u \} = \varepsilon_{2}$

A's subdomains:

A's function $g(x) = |x - 1.3|$ Integers limited to 216 - 1.

Key: Parameter measured calculated system calculation example
System reliability (0.996)(0.986) = 0.982

Reliability of B alone:
\[ 0(1-1) + 1.02(1-0) + 1.41(1-0) + 0.757(1-0.2) = 0.986 \]

B input profile <0, 1.02, 1.41, 0.757>

\[ k_1 = \frac{3(0) + 1(0) + 0.6(0)}{3(0) + 1(0) + 0.6(0)} = 0 \]
\[ k_2 = \frac{3(0.003) + 1(1.0) + 0.6(0.002)}{3(0.147) + 1(0.6) + 0.6(0.836)} = 1.02 \]
\[ k_3 = \frac{3(0.003) + 1(0.002) + 0.6(0.002)}{3(0.147) + 1(0.002) + 0.6(0.836)} = 1.41 \]
\[ k_4 = \frac{3(0.003) + 1(0.002) + 0.6(0.002)}{3(0.147) + 1(0.002) + 0.6(0.836)} = 0.757 \]

Fraction of A outputs in B's subdomains:

Subdomain from S1 from S2 from S3
\[ U_1 = \{n|\leq n \leq 100\} \]
\[ U_2 = \{n|\leq n \leq 10\} \]
\[ U_3 = \{n|\leq n \leq 10\} \]
\[ U_4 = \{n|\leq n \leq 100\} \]

Failure rates 1, 0, and 0.2 respectively.

B's subdomains:
should we start with? A failure model of real defects is needed.

Intersecting subdomains is a good idea, but what subdomains

“the same” points only in arcane program terms:

Structural (program-based) subdomains are composed of

“the same” points, but only if the program is correct.

Functional (specification-based) subdomains are composed of

Discussion: “The Same”
How can we improve program continuity?

How can we use specification continuity?

matter to interpolate between test points. The 'other' engineers can rely on the continuous properties of...